THE physical therapy REVIEW

37th Annual Conference
American Physical Therapy Association
Penn-Sheraton Hotel Pittsburgh, Pennsylvania
June 26 — July 1, 1960

Pain and Amputations for Circulatory Disease — FELDER

Two Case Histories
Bilateral Above-Knee Amputee with "Stubbies" — McDOUGALL
Amputation Associated with Peripheral Vascular Disease — McLENAHAN

Some Problems of the Physical Therapist in Testing Cerebral Palsied Children — FRANCIS

Provisions for a Hand Clinic in a General Hospital — BERBERIAN

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Volume 40, Number 3 **March 1960**

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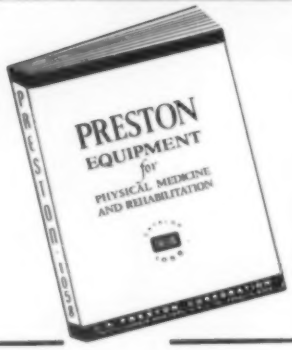

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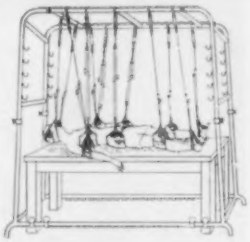

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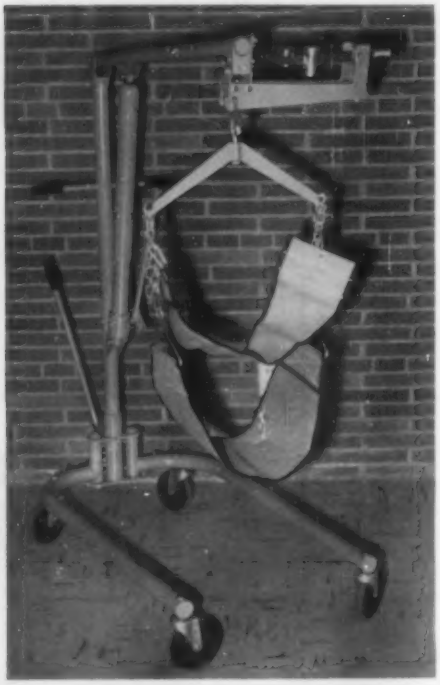

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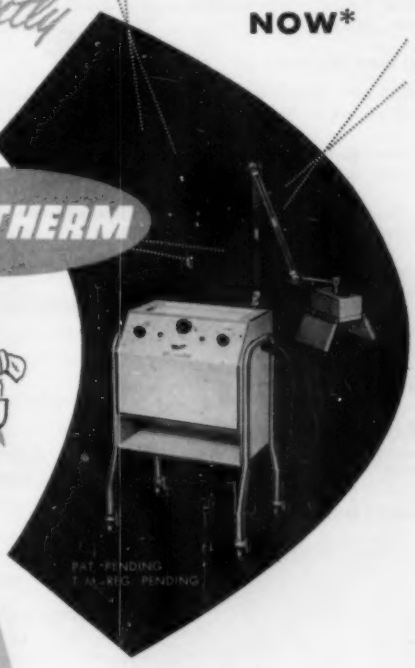

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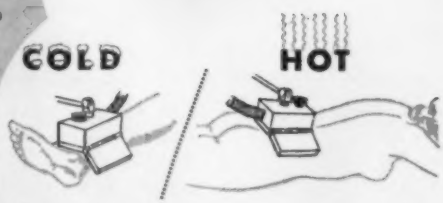

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March 1960
Vol. 40 No. 3

IN THIS ISSUE

Pain and Amputations for Circulatory Disease — Davitt A. Felder, M.D. 183

Two Case Histories

Bilateral Above-Knee Amputee with "Stubbies" — Richard V. McDougall 186

Amputation Associated with Peripheral Vascular Disease — Marion G. McLenahan 188

Some Problems of the Physical Therapist in Testing Cerebral Palsied Children — Shirley J. Francis 190

Provisions for a Hand Clinic in a General Hospital — Albert J. Berberian 193

Regular Features

Case Report

Rheumatoid Arthritis in a Juvenile — Margaret Corbin 195

Suggestions from the Field

A-K Amputation Exercise Cuff — Donald Dykinga . 197

Editorials 200

Association News 205

Conference — 1960 210

Education 217

Short Term Courses 216

Schools Offering Courses in Physical Therapy ... 221

Abstracts 223

Book Reviews 227

Book Reviewers for March 229

What's New 231

State Board Examinations — 1960 178

Index to Current Literature 180

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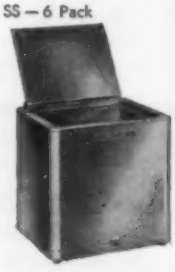

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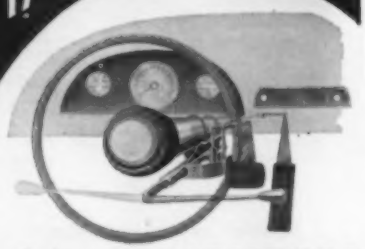

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AMPUTATION

Amputee Needs, Frustrations, and Behavior. Sidney Fishman, Rehabil. Lit., 20: 322-330, November 1959

ARTHRITIS AND RHEUMATISM

Rehabilitation of the Rheumatoid Patient By Use of a Steroid-Relaxant Tablet and Physical Medicine. Dominic A. Donio, Clin. M., 6: 2061-2067, November 1959

The Correction and Prevention of Deformity in Rheumatoid Arthritis. Michael Kelly, Canad. M. Ass. J., 81: 827-831, Nov. 15, 1959

CEREBRAL PALSY

Active Treatment of Cerebral Palsy. Henry O. Marsh, J. Kansas M. Soc., 60: 481-485, 504, November 1959

CIRCULATION

Clinical Aspects and Treatment of Thrombophlebitis. B. Seidenberg and L. Breidenback, N. York State J. M., 59: 4402-4407, Dec. 1, 1959

Ischemic Contracture of the Forearm and Hand. Alipio Pernet, J. Internat. Coll. Surgeons, 32: 552-559, November 1959

Management of Complications Seen in the Lower Extremities of Diabetic Patients. Patrick J. Kelly, Proc. Mayo Clinic, 34: 511-518, Oct. 28, 1959

Orthostatic Hypotension. Henry N. Wagner, Bull. Johns Hopkins Hosp., 105: 322-359, December 1959

EXERCISE

Correction of Gluteus Medius Gait: Dynamic Balance Gait. Charles O. Bechtol, Am. Surgeon, 25: 847-849, November 1959

Rehabilitation of the Upper Extremity in Infantile Spastic Hemiparesis. Mother Mary Lauretana, Doris Liepmann Partan and Thomas E. Twitchell, Am. J. Occup. Ther., 13: 264-267, November-December 1959

FUNCTIONAL AIDS

Crutches for a Patient with Severe Upper Extremity Impairment. Patrick Harbine, Nora Staael and John A. Evert, Arch. Phys. M., 40: 480-482, November 1959

GERIATRICS

The New Philosophy of the Domiciliary Care of Nonpsychotic Aged. Maurice E. Linden, Geriatrics, 14: 777-783, December 1959

NEUROLOGY

A Multi-Evaluational Study of Aphasic and Non-Aphasic Right Hemiplegic Patients. I. W. Karlin, J. Eisenson, S. Hirschenfang and M. H. Miller, J. Speech & Hearing Disord., 24: 369-379, November 1959

Multiple Sclerosis in a Small New England Community. Walter E. Deacon, et al, N. England J. M., 261: 1059-1061, Nov. 19, 1959

Spastic Hemiplegia: Etiology and Early Diagnosis. E. Denhoff and R. H. Holden, GP, 20: 153-161, November 1959

The Muscular Hypotonias of Infancy. Stephane Thieffry, Am. J. Phys. M., 38: 231-238, December 1959

NEUROPHYSIOLOGY

Clinical Considerations on Innervation of Skeletal Muscle. Gunnar Wohlfart, Am. J. Phys. M., 38: 223-230, December 1959

Functional Organization of Afferent Innervation of Muscle Studied in Man by Monosynaptic Testing. Jacques Paillard, Am. J. Phys. M., 38: 239-247, December 1959

Functional Recovery in Primates after Large Subtotal Spinal Cord Lesions. F. A. Mettler and Henry Liss, J. Neuropath., 18: 509-516, October 1959

Intramuscular Propagation of Sensory Impulses. A. S. Paintal, J. Physiol., Lond., 148: 240-251, October 1959

Nerves: Nature's Radar and Computer Networks. Today's Health, 37: 55-60, December 1959

Observations on the Extensor Plantar Reflex and Its Relationship to the Functions of the Pyramidal Tract. Russell Brain and Marcia Wilkinson, Brain, 82: 297-320, September 1959

The Physio-Pathology of Neuromuscular Transmission and the Trophic Influence of Motor Innervation. J. E. Desmedt, Am. J. Phys. M., 38: 248-261, December 1959

ORTHOPEDICS

Cervical Whiplash Injury. George Stuart Hackett, Rheumatism, Lond., 15: 64-68, October 1959

Stabilization in the Low Back Complex. H. P. Kopell and W. A. L. Thompson, Postgrad. M., 26: 652-658, November 1959

PARAPLEGIA

Rehabilitation of the Bladder in Injuries of the Spinal Cord. Walter C. Stolov, Arch. Phys. M., 40: 467-474, November 1959

PSYCHIATRY

Behavior Problems and the Brain Injured Child. Margaret A. Kennard, Northwest M., 58: 1535-1541, November 1959

Depressive Reactions in the Aged Chronically Ill. M. Straker, Canad. M. Ass. J., 81: 910-915, Dec. 1, 1959

Stress as a Factor in Disease. P. A. B. Raffle, Lancet, Lond., 2: 839-843, Nov. 14, 1959

PULMONARY DISEASE

Establishment and Maintenance of Bronchial Drainage in the Ambulatory Patient with Emphysema. S. Thatcher Hubbard, Jr., Northwest M., 58: 1542-1548, November 1959

REHABILITATION

An Evaluation of Nursing Homes in a Suburban Community. W. J. Peeples, B. H. Ong and V. B. Maxwell, South. M. J., 52: 1454-1460, November 1959

The Minnesota Plan for Rehabilitation of the Handicapped. F. H. Krusen, H. L. Knudsen, A. W. Gehrke and W. W. Keenan, J. Lancet, 79: 489-497, November 1959

Measurement of Energy Expenditure During Ambulation with Special Reference to Evaluation of Assistive Devices. Gregory Bard and H. J. Ralston, Arch. Phys. M., 40: 415-420, October 1959

(continued on page 218)

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*Pain and Amputations for Circulatory Disease**

Davitt A. Felder, M.D.

History

From the findings of archeologists, amputations of the extremities have been performed since the time of primitive man. The ancients in biblical times and also in the time of Hippocrates made amputations "to remove useless members, to reduce invalidism, and to save life," as Gilles,[1] the English orthopedist, puts it. Later in the Middle Ages amputations were done for leprosy, infections, and ergotism. Ergotism is a disease of the blood vessels that arises from eating wheat or rye which has been infected with a fungus known as wheat-rust. This fungus has a chemical in it which causes marked constriction of the blood vessels of the person ingesting this material. This often results in the painful ischemia of the extremities and eventually gangrene. The Middle Ages, therefore, probably represent the first time that amputations were performed for circulatory disease. This disease of ergotism is now almost unknown since we have learned to raise wheat which is resistant to the wheat-rust fungus.

With the introduction of cannon shot at the battle of Crécy in 1346, and from that time on, battle injuries became so mutilating that amputations became frequent events in military medicine; in fact, trauma in battle and other injuries are still occasionally indications for amputation.

With the advent of chemotherapy and antibiotics in the past 20 years, infectious processes have become less frequent as indications for amputation; although the conditions still occur, it is infrequent to see a case of tuberculosis or other osteomyelitis requiring amputation.

Since people are living longer they are attaining the age at which arteriosclerosis, a degenerative process of aging in the blood vessels, begins to take its toll from the closure of arteries to the various organs in the body. As a consequence of this and other possible factors, today amputations are performed more frequently for peripheral vascular disease than for any other reason. There are other peripheral vascular diseases which occasionally necessitate amputation, but arteriosclerosis is by far the most frequent indication. As a result of this, most of the amputees are elderly people. Because this disease affects the arteries of the lower extremities much more frequently than those of the upper extremities, amputations involving the lower extremities occur more frequently also.

Other characteristics of patients in this group are that their tissues do not heal as rapidly or as well and cannot tolerate the trauma of heat, cold, and physical contact that those of younger people can. Further complicating the situation is the fact that these patients have other impairment from arteriosclerosis resulting in mental changes, poor balance, and often markedly diminished exercise tolerance due to heart and lung involvement.

In the older historical writings very little can be found concerning the pain associated with

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* This paper and the two case histories that follow were presented at the Annual Conference of the American Physical Therapy Association, Minneapolis, June, 1959.

amputations. Fortunately, pain is not a frequent problem in the care of such patients; however, when it does occur it is a most difficult problem to solve. With the added difficulty of a painful amputation stump a patient of this kind is bound to be one of the greatest challenges to the physical therapist.

SURGERY

There are those who believe that a deformed limb, if it has any use at all, is better than an artificial one. If there is the remotest chance of saving a limb, or of having it be useful and not detrimental to the rest of the body, the conscientious surgeon will avoid amputation. Amputation must be considered, however, in some instances where a limb is the source of intractible pain. If this pain is allowed to persist for a period of months while the surgeon is endeavoring to save the extremity, the patient may be so changed that even after amputation the pain may persist. There appears to be some relationship between the length of time that severe pain has existed and the degree of relief produced by amputation. The longer the pain has been present the less likely it is that amputation will relieve it. For this reason, early and careful surgery is advantageous.

The surgeon invariably tries to make the amputation high enough to assure good healing while at the same time allowing enough of the limb to remain for function of the amputation stump in an artificial limb. Even with these precautions, occasionally patients, with arteriosclerosis especially, require re-amputation because of advancing disease during or shortly after the operation. Besides this latter complication, secondary infection and slow healing of the amputation stump are often accompanied by pain. Even stumps that heal without complications and are apparently normal may also be the seat of pain. In other words, pain after amputation may not be related necessarily to the condition at or following surgery.

POSTSURGICAL MANAGEMENT

It is true that early ambulation, proper and continuous binding of the amputation stump, shoulder strengthening exercises before and after surgery, all serve to rehabilitate the patient as soon as possible. However, early ambulation which leads to swelling or edema of the stump, excessively tight bandaging shutting off the blood supply to the tissues soon after amputation, and other vigorous treatments may defeat the purposes intended and lead to a prolonged hospital course and often a more painful one. One must exercise good judgement and avoid overzealous treatment, especially in the first few weeks after surgery of this type. It goes without saying that early ambulation, the proper bandaging of a stump, and other ancillary devices contribute to an early recovery and happy adjustment in the fitting of an artificial limb and they most certainly must not be neglected.

Specifically:

1. *Bandaging* to shrink a stump should not be instituted before the tenth postoperative day in my opinion. A cotton-elastic bandage should be used for the first four weeks. After this time, if the stump is not too tender, bandaging with a "rubber-reinforced" elastic bandage may be instituted. Whenever possible bandaging should be carried well above the most distal joint of the extremity.

2. *Crutch walking* should be taught as soon as possible but in many instances such exercises before the seventh postoperative day may result in swelling and delayed healing of the amputation site.

3. *Creeping and rising* exercises are essential not only to avoid the embarrassment of the adult (usually aged) amputee from finding himself on the floor after a fall for the first time since early childhood, but also to give him the self confidence needed to get to a chair or other object and rise to an upright position. Such exercises should be begun on or about the tenth postoperative day. The confidence and ability to creep across a room and rise to the upright position with crutches in place usually takes no more than a week for most patients with good balance sense and the will to become a functional person again.

4. *Flexion and extension* to full range activity by the patient are the best exercises for the avoidance of contractures. Prolonged sitting in a wheel chair or in bed is conducive to the development of contractures and to edema in the stump. At the cost of some comfort the patient should change position as often as possible and spend at least an hour and a half a day (usually three half-hour periods) on the abdomen to assure hip and knee extension.

THE FITTING OF PROSTHESES

In young patients with normal or minimal circulatory disturbances an amputation stump can be shrunken after healing and be ready for a fitting by the sixth postoperative week. In elderly patients and especially those with general-

ized vascular disease it is often three months or more before such a patient is ready for a fitting.

To avoid discomfort and breakdown of tissues, ischial weight bearing is the ideal for the elderly or diabetic patient. This can be achieved with a light-weight suction-socket prothesis as well as with a harness-type of prosthesis depending on the patient's anatomical requirements or limitations. In younger persons end bearing and side bearing are permissible. In some instances this may allow more natural-appearing movement and better balance by placing prosthetic joints in better relation to those of an opposite limb.

In bilateral amputations it is often advisable to lower the patient's center of gravity and thus improve balance by shortening the prostheses to well below the patient's natural height.

PAIN IN THE AMPUTATION STUMP

Immediately after an amputation all patients experience the pain of local surgery. This usually wanes and is gone within a week. However, some soreness of varying degree may remain locally for six months or more as after any surgery. Patients will also experience some "awareness" of the limb which has been removed. This awareness at first may have some uncomfortable and even painful characteristics but these characteristics, too, eventually and gradually leave in most patients.

In some persons pain is present in the amputation stump persistently from the first postoperative day on. Fortunately these patients are in the minority; for they are difficult to treat and give comfort to. In many of these cases there is a "jactitation" or spasmodic jerking of the stump which the patient cannot control. In some there is also coldness and blueness of the stump even with good main arterial pulses in the remaining portion of the limb. In this author's experience there is no satisfactory method of relief available for this type of patient.

Fortunately the majority of patients with pain in an amputation stump have difficulties that can be treated.

Persistent or *advancing ischemia* from arteriosclerosis (absent pulses) causing coldness and pain most often means amputation at a higher level.

Rarely *varicose veins* will require ligation and resection.

Neuromata or overgrowth of nerve ends can usually be identified by the presence of an extremely tender and usually small lump deep in the amputation site. This can be remedied by cutting the nerve completely across high up on the extremity.

Bone infections, spurs or *overgrowths* may give rise to pain and can be treated by antibiotics and local surgical resection as indicated.

Fat and flabby stumps result from poor original binding and prolonged sitting. This of course can be prevented by adequate elastic binding begun in the first postoperative weeks and continued until fitting. Once it is present such fat and fibrosis is difficult to get rid of. Bed rest with elevation of the foot of the bed 6 inches and daily elastic binding will often reduce the fat stump in size but this may take several weeks to accomplish.

Bursae often form at the end of a stump. Ordinarily such a bursa will be asymptomatic. But as with other bursae they may become inflamed and painful. The treatment of this condition with rest, heat, and salicylates may be all that is necessary. At times, however, aspiration of bursal fluid with injection of medications is sometimes necessary and in some instances of persistent or chronic bursitis surgical excision must be resorted to.

Callouses are not abnormal but when painful they often mean an ill-fitting socket or faulty alinement of the limb. Both of these conditions can be remedied by the limb maker.

Phantom pain which persists is often described by the patient as with the limb twisted or contracted into a bazarre position. This is more likely to occur in patients in whom the pain prior to amputation existed for more than six months and in patients who before operation were of the more excitable and emotionally unstable type.

Such pain is usually worse if the patient is having other problems as well; psychiatric treatment, although it does not provide a cure, is often of great help in such instances. The phantom pain is almost never lost but the patient learns to live with it and can become a functional member of society again. After all, this is the ultimate purpose of all amputaton and follow-up care.

SUMMARY AND CONCLUSION

The history of amputations and indications are discussed. In the present day most amputations are made for arteriosclerosis of the lower extremities. It is brought out that besides choosing a proper level it is important that amputations be performed as soon as possible when pain is a major symptom. The less time the pain has persisted the less likely is the patient to have pain postoperatively.

The postsurgical management is given with emphasis on: 1. early and continued binding of the stump, 2. crutch walking instruction, 3.

creeping and rising exercises, and 4. flexion and extension exercises.

Fitting of the prosthesis is discussed in terms of time for fitting and type of limb.

Pain in the amputation stump is also considered with mention of many of the causes and treatment.

The purpose of the amputation and the follow-up care are all designed to make the patient a functional person in society again.

REFERENCES

1. Gillis, L.: Amputations, New York, Grune & Stratton, Inc., 1954.
2. Leriche, R.: The Surgery of Pain, London, Bailliere, Tuidall, and Cox, 1939.
3. Mitchell S. W.: Injuries of Nerves, Philadelphia, J. B. Lippincott & Company, 1872.
4. Vasconcelos, E.: Modern Methods of Amputation, Philosophical Library of New York, Inc., 1945.
5. White, J. C., Smithwick, R. H., and Simeone, F. A.: The Autonomic Nervous System, New York, The Macmillan Company, 1952.

Two case histories reported by members follow.

First Case History

Bilateral Above-Knee Amputee with "Stubbies"

Richard V. McDougall, B.S.

A 68 year old widower was admitted June 26, 1958, to the John J. Kane Hospital from a local general hospital. The diagnosis was arteriosclerotic heart disease, arteriosclerosis obliterans, cirrhosis of the liver, and bilateral above-knee amputations. Except for furuncles (boils) on both hips, he appeared to be in no distress.

In 1955 he had had an infected callus of the right foot, complicated by poor circulation, which had resulted in gangrene of the toes. Surgical treatment consisted of amputation of his right leg 15 inches below the greater trochanter. In 1958 infection and gangrene of the great toe developed in the left foot and in May of that same year the left leg was amputated 14 inches below the greater trochanter. The poor circulation was attributed to arteriosclerotic changes with thrombus formation in the small vessels of the feet.

The patient's consumption of cigarettes averaged one package per day and he also used 6 ounces of whiskey daily. The patient lived with a daughter after the first amputation. After the second amputation he was hospitalized in this institution because there was no one at home to care for him. After two weeks of initial evaluation by the general medical staff, the patient was referred to the rehabilitation department.

On July 17, 1958, the patient was evaluated by the staff of the rehabilitation clinic, which consisted of a consultant psychiatrist, the staff physician who was head of "restorative services" in the hospital, a medical-social worker, and a physical therapist, myself. The patient's history was reviewed and the patient was examined by the clinic staff members to determine to what extent rehabilitation was possible and practical. While in the general hospital prior to his admission to John J. Kane Hospital, codeine had been prescribed to ease the pain he had had in his legs. Despite the fact that the admitting physician's notes indicated that the patient was not in distress, codeine was again ordered late in the day of admission. Similar notes made by the nurses point to the fact that the patient complained almost daily of pain in his stumps. The staff physician in charge of restorative services felt that there was a danger of his becoming addicted to codeine and ordered it stopped, prescribing a nonhabit forming substitute.

The following additional recommendations were made by the rehabilitation clinic staff:

(1) Apply compression bandages to the stumps; (2) initiate preprosthetic program for stretching the slight flexion contractures of both hips and strengthening of the necessary musculature; (3) teach activities of daily living while in a wheel chair; (4) if he progresses satisfactorily, "stubbies" are to be considered at a later date; (5) social service staff should check on home conditions in view of possible discharge if satisfactory progress is made in activities of daily living.

The patient was then transferred to the rehabilitation unit of the hospital and on July 21, 1958, a daily preprosthetic program was begun. Using elastic bandages, the patient was shown how to wrap his stumps from the distal ends to as far proximal as possible. He was instructed to remove all of the bandages and reapply them at least four times a day; he was further instructed that the bandages were not to be worn at night while he was in bed.

Exercises for stretching of the flexion contractures of the hips were begun. He was directed to sleep on his abdomen as much as possible and to spend part of each day (four half-hour intervals) lying on his abdomen as further means to reduce the contractures. Strengthening exercises for the stumps, abdominal, back, and arm muscles were also initiated.

Aug. 15, 1958: The patient began to use "sawed

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off" crutches to help develop a sense of balance and to further strengthen his arms.

Sept. 6, 1958: He refused medications for pain, stating that, "he did not need them any longer since the pain in his stumps was gone."

Sept. 9, 1958: The strenuous exercise program was still in effect. He was using his wheel chair to go to the dining room; he was now able to get from the wheel chair to bed and back, and from the wheel chair to toilet and back. His sense of balance was now such that he was able to lift himself off the floor and walk with the "sawed off" crutches. He managed to walk for a distance of about 10 feet, rested, and then returned to the mats where his exercises were performed.

Oct. 15, 1958: The mental attitude of the patient was poor because of the prolonged period of exercises and the delay in ordering his prostheses. Physically he was ready to start using prostheses, but the problem of financial arrangements was delaying procurement. The hospital had agreed to purchase one prosthesis if the family would be responsible for the other. Since the family council of six sons and two daughters had to be contacted in order to effect some sort of an agreement, much time was consumed. His discouragement became such that he would refuse to go to physical therapy, saying, "What is the use? All you do is exercise."

Nov. 14, 1958: Financial agreements were finally made and a prosthetist was notified to arrange for measuring the patient for his "stubbies." The prescription for the prostheses included bilateral pelvic bands, quadrilateral sockets, and regular "stubby feet." (Stubbies: Short prostheses without knee joints. The feet are attached to the sockets where the knee joints normally would be. This gives the wearer a very low center of gravity and no joints to worry about.)

Nov. 20, 1958: The patient was measured for bilateral short prostheses.

Dec. 27, 1958: He was sent to the prosthetist for final fitting of the "stubbies." The prosthetist reported that he walked a few feet in the parallel bars.

Jan. 9, 1959: The patient received his prostheses. They were checked out according to standards advocated by the Advisory Committee on Artificial Limbs and as taught at the University of California at Los Angeles and New York University, with certain modifications that would apply to "stubbies."

Jan. 11, 1959: Prosthetic training was begun, consisting of balancing in parallel bars, standing to get the "feel" of the sockets and the change of height and position. He performed these functions for the first time with rather remarkable ease. However, he did experience some difficulty in getting up onto a chair while wearing the "stubbies." His arms needed further strengthening in this particular action and he had to become accustomed to the additional weight of the prostheses. He was able to walk a few steps in the parallel bars unassisted.

Jan. 15, 1959: He began to have distress around the pelvis in the back and along the medial rim of the sockets. He was referred to the prosthetist for corrective measures.

Jan. 20, 1959: He was now able to get off and on a straight armless chair unassisted, and on and off a toilet seat with the assistance of a hand rail.

Jan. 25, 1959: The problem of getting in and out of bed while wearing the prostheses was mastered.

Feb. 10, 1959: He was now able to put on and remove the prostheses without assistance and walked about 50 feet using the "sawed off" canes.

March 11, 1959: At this point he became belligerent and refused to attempt stair climbing. He asserted that he would use the steps when he had to and not before. No amount of explanation and/or persuasion altered his attitude. We felt that physically he was able to negotiate steps with little difficulty as his arms were extremely strong and he had good control of them.

Apr. 5, 1959: The patient was completely self sufficient with the use of two "sawed off" canes. Actually, the only difficulty he had was in using a toilet. The lack of friction between the posterior surfaces of the sockets and the ring of the seat caused him to slide off. But once he was taught to sit backwards, he could hold onto the storage tank, thus keeping himself in position. He was now able to get in and out of the hospital beds, get on and off of all kinds of chairs, put on and take off the prostheses, and dress and undress himself. But to this date he had not tried steps.

The social worker reported that upon discharge the patient would be living with a daughter who works and that it would therefore be necessary for him to be alone during the day. However, the patient was pleased with the progress he had made and was confident that he could manage being alone during the day. He was therefore discharged on Apr. 5, 1959 to the home of his daughter.

COMMENTS

In spite of the fact that he expressed an eagerness to be discharged, we questioned the patient's sincerity. It was the feeling of the staff that his refusal to attempt to negotiate steps was based on a desire to remain in the hospital. Since he knew that one of the requisites for discharge is the ability to use steps, it is our belief that he had tried this means to prolong his stay.

This case presents a man who had both legs amputated and had experienced such pain following surgery that regular codeine medication was necessary—to the point that it was feared that he might become addicted to the use of this drug. Once he was put on a vigorous rehabilitation program, was kept busy, and was shown that he could manage with his disability, the pain in his legs disappeared.

Case histories continued

Second Case History

Amputation Associated with Peripheral Vascular Disease

Marion G. McLenahan, B.S.

Patient, B.B., a 60 year old widow, lived alone in her own single two-storied home in the city. Mrs. B. has five children, all married and living in rural areas. She was employed as a stock clerk in a large department store with specific duties of marking stock. She had been planning for her retirement in three years at which time she expected to be financially independent of her family because of her Social Security benefits and the rental income from her extra rooms.

The patient gave a history of persistent edema of feet and ankles and a heavy feeling in her legs at the end of the day. She is 4 feet 10 inches in height and spent long hours at work sitting in a regulation straight chair which did not permit her to rest her feet on the floor. Therefore, she was continuously subjected to pressure in the popliteal areas.

Mrs. B. had been a known diabetic for 13 years; the diabetic condition was discovered when she was hospitalized for seven weeks for treatment of an ulcer on her buttock which had developed following trauma. The diabetes was controlled by insulin. However, she discontinued the insulin a year prior to her present illness and following the death of her husband because it was "too expensive."

On Aug. 1, 1958, she injured her right ankle by striking it on a chair. Two weeks later she again injured it at the same site on the pedal of a tricycle. An ulcerating lesion developed covering the lateral malleolus and lateral aspect of the foot. Self-administered treatment with warm epsom salts foot soaks and vaseline dressings for a period of seven weeks failed to promote healing so she consulted a doctor. Medical treatment with antibiotics resulted in no change in the condition of the lesion. She was referred to a surgeon who advised immediate admission to the hospital on Sept. 19, 1958.

Examination on admission revealed that the areas in and around the lesion were black and necrotic and the entire flap was edematous and tender on pressure. There were varicosities of the great saphenous vein on the left, but none on the right. Dorsipedal pulse was absent bilaterally; femoral pulse was strong on left and right; the popliteal pulse was felt on the left, but was absent on the right. Sensation was intact. There were pigment changes and thickening of the skin with old scarred areas on the left foot and the skin of the right leg. Deep tendon reflexes were hypoactive and patellar reflexes unobtainable. An estimate of the functioning of peripheral arteries was impossible due to marked edema. The foot was pale with poor blanching time. It was believed that the gangrene was due to arterial insufficiency rather than venous stasis.

Two days after admission the edema subsided markedly and the area was unroofed and drained. The patient's temperature "spiked" and the decision was made to amputate on Sept. 24, 1958. Site of amputation was 2 inches proximal to the lateral malleolus. There was adequate bleeding from the posterior tibial artery but none from the anterior tibial. On the tenth postoperative day the stump was acutely painful with moderate purulent drainage. Oscillometric studies were made and the site for re-amputation was decided. On October 16, a mid-thigh amputation was done. An excellent postoperative course followed, although the patient had moderate phantom pain. The patient had no physical therapy during hospitalization since the service was not available in the hospital. However, the nursing staff gave attention to correct positioning so as to prevent contractures.

Mrs. B. was allowed up on October 21 and started ambulation in a walkerette October 26. She was fitted with crutches and discharged on Oct. 28, 1958. She had no instruction in crutch walking, but was referred to the Rehabilitation Center. The patient went to her daughter's home 25 miles distant in a rural area. Lack of transportation prevented her from starting rehabilitation. The public health nurse in the area learned of the patient's problem and initiated referral by her physician to the physical therapy service of the County Health Department. The physician's orders to the therapist were to teach ambulation using crutches. On our first visit we found the patient in a wheel chair, propelling herself with her left foot most of the time while she did some of her daughter's housework and cared for her 4 year old granddaughter. The left leg had several abrasions about the ankle, the skin was cold and Mrs. B. stated she experienced a tingling sensation frequently. As stated previously the patient was of short stature and again was getting undue pressure in the popliteal area. Her ankle was bumping against the right footrest which was kept lowered. The physical therapist elevated the left footrest and adjusted both footrests to eliminate pressure under the knee and to prevent further injury to the ankle. Instructions in crutch walking were given. These included lead-up exercises, balancing against the wall, progressing to balancing away from the wall, thence to walking. Since the therapist's visits could not be made daily because of the distance, the public health nurse in the village was given instructions and demonstrations of procedures, the local nurse then made daily visits until the patient was confident she could get along with less frequent visits. A walkerette was provided for her from the local church's loan cupboard to allow her to get about home and also increase the

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strength of her arms and leg. The range of motion of the right hip and stump was checked and instructions were given to the patient to do range of motion exercises several times each day. She was encouraged to use her wheel chair as little as possible.

The physical therapist visited biweekly and evaluated Mrs. B.'s progress. The patient was eager to become independent and talked about getting a prosthesis. The doctor had not discussed this with her; and because of the winter weather and lack of transportation, the patient was not able to visit his office in the city until February, 1959. At this time he told her she could not have a prosthesis because of the poor circulation in her left leg. He stated that she might be 60 years old but her arteries were 100. The patient was very depressed following this visit and on the therapist's next visit she found a very discouraged patient. Mrs. B. was angry and determined that she was going to get a prosthesis and going to return to work and back to her own home. The therapist listened to the patient's account of her visit to the doctor and felt that because of being emotionally upset at the time of this visit, she may not have understood the reasons given to her. The decision for the therapist to visit the physician to get the answers to some of the patient's questions restored a measure of her usual happy disposition.

A conference with the doctor was held and the whole problem discussed. Following this he agreed to allow her to obtain a prosthesis, but stated it was only a matter of time before she would lose her other leg. The therapist suggested that Buerger's exercises might delay this event. He stated that he had never experienced success with them, but had no objection if we tried them. Orders were obtained for preparation of the stump for a prosthesis and he agreed to referral to the Division of Vocational Rehabilitation for assistance in procuring the leg and for vocational counseling.

The patient was still experiencing phantom pain and, in addition, the stump had become sensitive to touch with a tickling sensation response to the extent that she would laugh heartily when the lateral aspect was handled. Because of this a nylon elastic stump shrinker was substituted for the bandage.

The patient received her prosthesis on May 21, 1959, and training was begun the following day. There were no problems encountered, possibly because the patient was well motivated. The walkerette was again used for gait training and in two weeks the patient was walking with one cane. She returned to her physician for a checkup wearing her prosthesis. He was both amazed and delighted with the patient's progress and when he examined the left leg he found the circulation markedly improved. He is now convinced about the use of Buerger's exercises, and stated he needed instructions from a physical therapist on the proper technic of doing them. At the time the physician told her she could not have a prosthesis, Mrs. B. had told him she would dance with him with an artificial leg. Mrs. B. reminded him of this and they did a few steps.

Mrs. B. is today on her way to California to visit relatives. She will be returning to her former employment on Sept. 1, 1959, a happy and appreciative friend of physical therapists.

Successful treatment of an amputee with peripheral vascular disease in the home demands that the physical therapist be a bit of a social worker, psychologist, coordinator and mechanic, as well as a physical therapist. However, the effort is well worthwhile and working with these patients is a great satisfaction to physical therapists in the public health field.

College of Nutrition Formed to Promote Metabolic Research and Therapy

Formation of the American College of Nutrition was announced on October 26 by a group of New York and New Jersey specialists in nutrition, metabolic diseases, and gastroenterology. The college will not be limited to physicians in these fields but will also include gerontologists, endocrinologists, surgeons, and others. Its purpose is to promote postgraduate research and education in therapeutic nutrition—the supply, transport, and utilization of materials for the building, maintenance, and reproduction of cells, structures, and systems of the human body.

"Nutrition used to be the specialty of the homemaker, but now with the development of biochemistry and microbiology through which medicine is learning how to manipulate materials at the cell level, it has become a medical specialty," said Dr. Robert Adams Peterman, secretary-treasurer of the new college.

The college is incorporated as a nonprofit organization subject to American Medical Association regulations. Its annual meeting will precede the AMA convention in the same city each year, with the first meeting scheduled for Miami, Florida, next June. Fellows of the new college will be entitled to use the initials "F.A.C.N." as part of their signatures.

Some Problems of the Physical Therapist in Testing Cerebral Palsied Children*

Shirley J. Francis, B.S.

The diagnosis of cerebral palsy is based primarily on the neurological findings, but testing must be carried out in many areas before a fair assessment can be made of the child's potential for habilitation. As a member of the "team" responsible for evaluation of the cerebral palsy patient, the physical therapist is in the peculiar position of having no standardized examination such as the manual muscle test. This lack is partly due to the nature of cerebral palsy, which precludes the administration of an ordinary manual muscle test because of the child's inability, except in very mild cases, to elicit isolated muscle action; and partly due to the fact that in dealing with brain damage, we find not only motor dysfunction but other deficits which influence motor function and may alter the child's total physical performance. Because cerebral palsy is generally complex, testing involves the evaluation of a series of problems of varying degrees, each interacting with the other. Before beginning a physical evaluation, the physical therapist should be acquainted with as many findings as are available through examinations by other members of the "team."

One of the most important areas tested is the psychological. The therapist should know if the child is old enough to be treated. In this instance, "old enough" means not only in chronological age and mental age, but socially mature enough to cooperate in treatment. The psychological report will also indicate areas of special learning difficulty. The "brain-injured" child [1] is particularly trying to test or to treat because of distractibility, tendency for motor perseveration, and perceptual and conceptual problems. "Old enough" may also be partially determined by studies which have been done to ascertain that the child has sufficient skeletal maturation for weight bearing and can tolerate braces locked in straight alinement.

Testing in the sensory areas is equally important. The audiometric report may show that the child has a hearing loss which may be a true central deafness, or that he has a mild to severe pitch cutoff type of hearing loss generally associated with athetosis due to Rh incompatibility.[2] If the child is wearing a hearing aid, it should be worn during testing, but with the young child, too much reliance should not be placed on the aid to bring the hearing up to normal. Many young children have not adjusted to their aids and are still somewhat dependent upon lip reading and visual clues for directions. It becomes an important and often lengthy procedure, therefore, to keep a face-to-face relationship with either the deaf or hard-of-hearing child and to give him directions in a loud voice supplemented with gestures or demonstrations.

Dr. Perlstein[3] and others have found that approximately 50 per cent of cerebral palsied children have visual problems which range from total blindness to a mild strabismus. Lack of sight or the inability to focus properly causes a child to be insecure in attempting postural balance work, and once he becomes ambulatory he has the large problem of spatial orientation and dealing with obstacles. Blind children are difficult to test because of this marked insecurity. A little boy we have treated brought so many small pillows with him as security props, that in testing him, it first became a challenge to get rid of the pillows long enough to see if he could support his weight with his hands. We made the mistake of trying to orient this child to the building after he had begun crutch walking; he would have learned faster if he had covered the same ground first on hands and knees which was his previous method of exploration.

Another problem encountered on the sensory level may be the presence of astereognosis, especially for form perception, which has been found to be of particularly high incidence in patients with infantile hemiplegia.[4, 5] The young child with a handicapped hand does not willingly attempt to use it, but with training he may gain some degree of skill and perception. On initial testing, especially with spastic quadriplegics who

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* Presented at a Workshop on Testing Procedures of the Texas Southeastern District, APTA, February, 1959.

are not using either hand, the physical therapist cannot tell if the child has had a poverty of experience or if he has true sensory loss.

A most interesting and challenging problem is the child who is neither deaf, ataxic, nor apparently "brain injured," but who does not comprehend simple directions. His problem may be related to the experience level in a home environment where he is the only child. He may have been so overprotected that he has never had the chance to learn changes in body position and doesn't know where "up" is—or "down" —or "sideways." Or this child may have been braced continuously at such an early age that the normal, exploratory experiences (beginning on the floor) have been denied him. (The Harris County Treatment Center[6] in Houston, Texas, has been combining floor play and use of a "tumble bug" with their nursery school group to give some of the very young children this experience in changing body positions. The consulting psychologist at the Center, Dr. Willie Mae Verniaud, says that the children enjoy the floor play very much.)

The child's record should be studied for any notation concerning previous convulsions or EEG readings which indicate a potential for convulsions. A child who suddenly stops and stares blankly or whose attention wanders is difficult to test. These children are suspected of having petit mal seizures which are nearly imperceptible, are of brief duration, but which may occur at frequent intervals during the day. If a child is an epileptic and medications are being administered for control, the examination of motor abilities may not give a true picture since certain drugs tend to make the child lethargic and slow in response.

The medical history should be noted also for X-ray reports which may show congenital or acquired deformities that may indicate precautionary measures in testing. The strangest one of this type we have known was a girl with athetosis and osteogenesis imperfecta. Needless to say, testing was carried out with extreme caution. Any abnormality of the heart may also call for limitation of physical activity, and the child's tolerance might be such that testing cannot be accomplished in one or two sessions but may take several sessions.

TESTING BY THE PHYSICAL THERAPIST

After learning as much as possible about the child in the areas just discussed, the therapist is ready for testing. In general, we find that the spastic child is blocked in his attempts at movement through normal ranges; the athetoid child is too unstable to perform isolated muscle action; and the ataxic child lacks primary coordination. Testing, therefore, becomes an analysis of the child's ability or inability to perform normal functions. Following are some of the specific factors which enter into testing by the physical therapist.

1. *Tonic neck reflex*

When a child has a hyperactive tonic neck reflex maintaining his head toward one side so that he cannot actively turn his head, the extremities on the side to which his head is turned will be extended and his opposite extremities will be held in flexion. This child is hard to test for sitting balance because he is drawn backward and to the side of the extended leg; in attempting standing balance and ambulation, he has trouble in placing both feet on the floor and generally lacks reciprocation. He may have the mental concept of these activities and the muscle power to accomplish them if the TNR could be controlled but, unless he can reverse his TNR at will, or utilize it for specific functions, it is impossible to test sitting, standing balance, or walking.

2. *Cerebral zero muscles—actual or apparent*

Flaccid paralysis is perhaps one of the best known disturbances and results in lack of muscle function. In the spastic, it may be noted in testing that there are nonfunctioning muscles. The problem in testing is to determine if these muscles are truly "cerebral zero" muscles. Mentally defective children and some brain-injured children are incapable of performing on command and are prone to show apparent flaccidity. With patient and continued observation of play, it may be possible to note muscle function which at first did not seem to be present.

3. *Spastic muscles on all sides of a joint*

In this problem, flexion is prevented by spastic extensors, and hyperactive flexors inhibit attempts to extend. In this type of child, movement is blocked in either direction. His true strength cannot be estimated and reciprocal action is not possible. After a training period, he may "break through" the blocking with one leg, only to show crossed overflow in the opposite extremity. Spasticity on all sides of the joints may also be found in the upper extremities and resembles rigidity, so that there may be some confusion in differential diagnosis.

4. *Gravity*

The force of gravity becomes an important factor when a spastic child attempts to move against it. Spasticity is most commonly found in the flexor muscles. The extensor antagonists are thus at a disadvantage when the child tries to maintain the body in the upright position. The impression of muscle strength of a spastic patient as seen on the treatment table is not valid generally and may be disappointing when he is placed in the weight-bearing position. This problem is particularly noted in the hips and knees.

5. *Measurement of contractures and leg length*

In these two areas of measurement, there are particular problems in positioning the child. The athetoid child has tense, frequently bizarre involuntary movements, and the spastic child is difficult to hold in straight alinement at the limit of his range of passive motion. The therapist working alone really has a problem with this and, if it is at all possible, should get someone to assist in holding the child during the measuring process.

6. *Mixed types of cerebral palsy*

Children with a diagnosis of one or more types of cerebral palsy are difficult to test in that it cannot always be ascertained by the therapist which neuromuscular problem is causing the greatest loss of functional ability. Mixed types which may be seen are athetosis combined with underlying spasticity; spasticity with overlaid athetosis, tremor or ataxia; tremor with ataxia; and rigidity with tremor. To illustrate this problem: Anne, aged 7, had a diagnosis of spasticity with overlaid athetosis; her knee flexion was 45 degrees on admission. After three months of therapy which was aimed at improving the range of knee extension, no gains had been made and surgery was discussed. Anne was taken from school to a hospital for tests given in this order: Thorazine, light anesthesia, and hypnosis. Under anesthesia, she demonstrated the desired relaxation and it was found that true contractures were 10 degrees on the right and 15 degrees on the left. Following a bilateral hamstring release, this child is ambulatory.

As stated in the beginning, we have no standardized test. One test which is gaining approval and use is the Motor Age Test[7] which grades the child on the basis of functional ability. The score is given in months according to the Gesell Scale for average motor development. Through this test, we may find ourselves confronted with a child who is 5 years old chronologically, 3 years old mentally, and who has a motor quotient level of 7 months. By a comparison of the age levels, this test gives a good index to the approach to motivation of the child in treatment. The test is also considered valuable as an objective determination of motor development and as a means of recording progress through retests at 6 month intervals. For instance, it may show that in 6 months time, the child has gained 4 months in motor development. The Motor Age Test, in my opinion, is the most logical approach to evaluation of the motor abilities of the cerebral palsied child—for all types and regardless of age. The need for standardized and valid testing procedures may be partially fulfilled by universal use of the Motor Age Test.

REFERENCES

1. Strauss and Lehtinen: Psychopathology and Education of the Brain Injured Child, New York, Grune & Stratton, Inc., 1947, Pp. 28-53, 75-95.
2. Aberson, Neva: The relation of the Rh factor to cerebral palsy, Cerebral Palsy Rev., 14:7:3-6.
3. Perlstein, M. A.: Cerebral palsy: medical and educational implications, Am. J. Ment. Defic., 60:1:116, 1953.
4. ———and Hood, P. N.: Infantile spastic hemiplegia, Am. J. Phys. M., 34:391, 457, 1955.
5. Hohman, L. B., Baker, L., Reed, Ruth: Sensory disturbances in children with infantile hemiplegia, triplegia and quadriplegia, Am. J. Phys. M., 37:1-6, 1958.
6. The Harris County Treatment Center for Crippled Children, 1415 California, Houston, Texas.
7. Johnson, M. K., Zuick, F. N., Wingate, Kathleen: The motor age test: Measurement of motor handicaps in children with neuromuscular disorders such as cerebral palsy, J. Bone Surg. Am. Vol., 33-a:3:693-707, 1951.

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Provisions for a Hand Clinic in a General Hospital

Albert J. Berberian, B.S.

A Hand Service was established at Boston City Hospital in 1947 under the direction of Dr. J. E. Flynn, a specialist in surgery of the hand, assisted by Dr. Charles Bradford, orthopedic surgeon. The development of this service stemmed from, and was directly related to, a growing awareness that hand injuries, especially major hand injuries, required a more effective method of approach and treatment than was available at the time. It was also felt that intensive work with hand injuries would contribute to a greater knowledge of the hand and increased skill in its care.

From the inception to the present, a great many changes have been made to broaden the scope of the hand service. Not only are the general surgical services concerned, but the orthopedic, pediatric surgical, and physical medicine and rehabilitation services as well.

The following is an over-all view of the organization and administration of the Hand Service.

1. Hand cases include all nerve, tendon, or muscle injuries of the upper extremities, and open fractures and amputations of hand or fingers.
2. A "Hand Service Dutv Roster" provides for assignment of residents to a 24 hour coverage of hand cases seen by way of the accident floor. This roster includes residents from three surgical services, the orthopedic service, and the pediatric surgical service. A similar roster provides for rotating of the consulting visiting surgeons.
3. All hand injuries, both major and minor, requiring hospitalization are admitted to the parent service of the resident(s) on duty, and are followed by the same service in the outpatient department Hand Clinic.
4. An operating room is reserved one day a week for "elective hand surgery." Such cases are usually selected at the outpatient department Hand Clinic.
5. Minor hand injuries are cared for in the "dirty room," by the Hand Service resident, who is on call and available on the accident floor.
6. Social Service has assigned personnel to each of the services of the Hand Service for specific referral.
7. A symposium on the hand, attended by students, with outstanding hand surgeons as invited guests and speakers, is held once a year. The meeting is open to all interested persons.

Hand Clinic

Subsequent to the establishment of the Hand Service, a Hand Clinic was established. This clinic was to provide a means whereby patients with hand injuries could be followed closely until discharge was indicated. It was to serve, furthermore, as an educational program for the staff.

The Hand Clinic is uniquely located in the outpatient section of the department of Physical Medicine and Rehabilitation; the physiatrist who serves the department on a part time basis was asked to join with the Hand Clinic staff and advise what physical medicine procedures should be carried out in the treatment of certain complicated hand injuries. To further this close working relationship between the two services, a physical therapist was assigned to the Hand Clinic. Initially this therapist observed the activities in the clinic and, upon request of the physicians, acted as consultant in physical therapy. Later on he started treating as many patients as possible, with the added responsibility of compiling a report on the type and results of the treatments.

In the early days of the program the patient load in the Hand Clinic averaged approximately 20 per weekly meeting with physicians from three surgical services in attendance. Within a

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few years the patient load has increased steadily until there is an average of 45 patients per weekly meeting. With an increase in patient load and an increase in interest and attendance by physicians from two more services, the need arose for someone to coordinate the activities of the Hand Clinic. Because of his interest and familiarity with the clinic this job was assigned to the attending physical therapist and for three years he has been in charge of its operation.

Although part of this work is administrative in nature, the benefits have justified using a physical therapist as coordinator. A close relationship is established with the physicians and there is a better understanding of the patients, their injuries, their treatment, and their progress.

The functions of the physical therapist coordinator include: instruction in home treatments; arranging for consultation so as to facilitate early referral of patients for physical therapy; informing the clinical physical therapists of pertinent information concerning the patients; checking hand cases with the referring surgeons to determine if they are satisfied with the treatment given and the progress made; and familiarizing the hand clinic staff with the program of the physical therapy department in regard to inpatient or outpatient treatment.

The administrative responsibilities of the physical therapist in charge include preparation of necessary arrangements prior to the Hand Clinic: having available the necessary paper forms (hospital admittance cards, prescription pads, and laboratory forms); determining assignment of new patients to the appropriate service; orienting new residents to general organizational routines; and preparing a yearly report on the total patient load with a breakdown into diagnostic categories.

PHYSICAL THERAPY

Practically all physical therapy for hand patients is given on an outpatient basis through the combined Hand Clinic and physical therapy outpatient clinic.

Statistics compiled show that the yearly average of physical therapy treatments of hand cases is 1,740 as compared to approximately 870 during the first few years of the program. The yearly average of individual "on the spot" instruction in home-care physical therapy is approximately 150, with a total of 750 rechecks and advanced instruction. Prior to the assignment of a physical therapist to the Hand Clinic, no patients received "on the spot" instruction for home care.

Usually only patients with major injuries of the hand are referred to the physical therapy clinic and such cases are treated from two to three months, three times a week. Because a greater number of hand cases (approximately two thirds of all major hand cases) require relatively long term physical therapy, the use of such modalities as whirlpool, paraffin, and electrical stimulation has increased.

The psychological reaction to a hand injury is usually one of overprotection. The patient uses only limited motion and all activities are carefully guarded. The statement "I am afraid to use my hand," is commonly heard. To overcome such fear and speed the recovery of the use of the hand, it is important that the surgeon, physiatrist, and physical therapist give a thorough and reassuring explanation of the prescribed manner and method of initiating activity. Therapeutic procedures carried on at home between treatments are constantly stressed, as is use of the hand, however awkward, in the activities of daily living.

The first two weeks of physical therapy, especially in those cases involving tendon repair, bone and joint injury, and tendon transplants are, we believe, the most important in which to obtain normal joint ranges and functional use of the hand. Usually only active motion is performed during the first two weeks because the hand surgeons feel that postoperative active motion is less likely to disrupt the tendon anastomosis and represents the fastest means by which normal joint ranges and functional use can be regained.

Conditions Usually Requiring Physical Therapy

1. Tendon lacerations
2. Fractures
3. Peripheral nerve injuries
4. Burns
5. DeQuervain's disease
6. Traumatic amputations
7. Nerve and tendon injuries
8. Crush wounds
9. DuPuytren's contractures
10. Osteoarthritis
11. Gunshot wounds
12. Congenital deformity (postoperative repair)
13. Frost bite
14. "Boutonniere" deformity

Other Conditions Seen in the Hand Clinic

1. Lacerations (skin-muscle-nail)
2. Infections
3. Abscesses
4. Avulsions (skin-nail)
5. Felons
6. Ganglions
7. Paronychia

8. Puncture wounds (stab-animal)
9. Foreign bodies
10. Human bites
11. Neoplasms (malignant and nonmalignant)
12. Contractures (old)
13. Hematomas
14. Mallet (baseball) fingers
15. Trigger mechanisms
16. Osteomyelitis
17. Felon with paronychia
18. Supernumerary digit

The average number of initial Hand Clinic visits was 818 per year; the average yearly Hand Clinic revisits was 1,009; and the average yearly patient visits was 1,827.

"The arrangement of our Hand Clinic in the outpatient department of the Physical Medicine and Rehabilitation Service has, with the voluntary cooperation of its personnel, added considerably to the operational performance of this specialized clinic. This close working arrangement has proven especially beneficial to the more rapid rehabilitation of our hand cases and has alerted both the surgical services and the Physical Medicine and Rehabilitation Service to the unque problem and management of hand injuries."[1]

REFERENCES

1. Personal communication, J. Edward Flynn, M.D., Chief, Hand Service—Boston City Hospital, Boston, Mass.

Editorial assistance was provided by Dr. J. E. Flynn, Chief, Hand Service, Dr. J. L. Rudd, Physiatrist in Chief, Department of Physical Medicine and Rehabilitation, Boston City Hospital; Mrs. Matilda Ross and Mrs. Julia Hekimian.

Case Reports

*Rheumatoid Arthritis in a Juvenile**

Margaret Corbin, B.S.

In May, 1954, a 4½ year old boy showed the following symptoms and findings: morning stiffness, stiffness and pain after napping or overactivity; pain upon passive flexion in all joints; limited extension and flexion of hips; spindling of proximal interphalangeal joints with flexion contractures; slight limitation of dorsiflexion in ankles, palmar erythema with no skin changes; warm without redness or swelling of the wrist, finger, elbow and knee joints; palpable spleen; and no change in weight for the last nine months. Muscle power was "fair" to "good" except for "poor" neck and trunk flexors.

Soon after his third birthday he had begun to fall frequently, showed clumsiness when running, complained of general discomfort when picked up, and had become neither able to climb stairs nor get up after falling. He had improved for a few weeks after a cast had been applied for fracture of the right tibia, at another hospital, where he was also started on Tri-Visol when a rachitic condition or the presence of progressive muscular dystrophy was questioned.

In September, 1953, he had been hospitalized for a week by the attending neurologist at Mary Fletcher Hospital at the request of his family doctor. Biopsies of muscles had indicated "collagen" disease. His strength had diminished in all muscle groups and there was definite atrophy, especially in the upper extremities. At that time Bruce was able to sit up and could come to a standing position only by maneuvering from the prone to the hands and knees position. He could place one foot at a time on a 12 inch high stool, but could not step onto it. Any handling by others had produced tears. The mother had questioned whether his behavior might possibly be based on imitation of his baby sister.

He had gained weight for a short time after his hospitalization and had seemed more active. Muscle tests three and six months later had shown little change in muscle power. Finger flexion contractures that had developed were gradually increasing, and finger extension and wrist motion were painful. A diagnosis of rheumatoid arthritis had been made in the pediatric follow-up clinic and the boy had been referred to the University of Vermont medical clinic for rheumatoid diseases, May, 1954. There was concurrence on the diagnosis and the following recommendations were made: vigorous physical therapy, 5 aspirins daily (0.324 Gm), monthly visits to medical clinic and pediatric clinic for continuing follow-up.

The home program was planned by the physical therapist in cooperation with the boy's mother: tub bath at 99 degrees F. for 20 minutes, followed by active and passive gentle stretching in all joint motions, substitution of infrared for tub bath when necessary or more convenient so that he would receive heat and exercise twice daily.

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* Presented at the Annual Conference of the American Physical Therapy Association, Minneapolis, June, 1959.

During the next three months his mother managed to give a heat and exercise program daily. Bruce could now get up from supine to a sitting position, put his foot up in her lap to tie his shoe, and he gained 5 pounds. She was encouraged to work to the limits of range of motion even though it hurt him. Subcutaneous nodules were appearing on his left leg and left little finger. Dihydroergotamine, one-half tablet daily, was prescribed and he continued on aspirin, five a day.

By December, 1954, painful nodules had appeared on the hamstring tendons, right forehead, and flexor tendons of the hands, and he was becoming less interested in doing his exercises. His mother observed lessened mobility on days when she omitted heat and exercises. She was instructed in giving warm paraffin baths to his hands. The paraffin baths followed by finger exercises gave him a great deal of relief. Since a new baby was expected in the spring, the physical therapist was asked to make monthly home visits to keep Bruce interested in his exercises, check range of motion, and note signs of any increase in rheumatic activity.

By summer his mother was able to resume daily exercises with Bruce, dihydroergotamine was discontinued, and the dosage of aspirin cut to 3 tablets daily. Bruce started school in September, 1955, liked it, and earned good grades. In December, 1955, the physical therapist reported, "Bruce went through all his exercises without crying and seems relatively pain-free. He has slight finger flexion deformities and lacks 10 degrees straight-leg-raising bilaterally."

A year later, 1956, he was faithfully doing his range of motion exercises, leaving on the school bus at 7:45 A.M., returning at 4:45 P.M., and taking no medication. He weighed 56 pounds and there was almost complete disappearance of the rheumatic nodules. Home visits were stopped but visits to the medical clinic were to continue on a six month basis.

In May, 1957, on Bruce's visit to the clinic, the physical therapist reduced his program to include mainly finger and shoulder motions and knee extension with feet dorsiflexed. In November she taught his mother to give manual resistance to dorsiflexion and eversion (these motions were still testing only "fair to good") and encouraged Bruce to get enough rest. His left leg had ached some when school first started, but he was as active as any boy of his age.

By May, 1958, he was considered to be in a state of remission—no rheumatoid nodules, spleen not palpable, 5 degree limitation of complete knee extension, minimal finger flexion deformity, "good" to "normal" power in dorsiflexion and eversion—he was attending school and playing ball in the evening. Six months later at the age of 9 he was still asymptomatic and in remission.

The *Review* invites case reports from physical therapists who have followed an interesting course of treatment with or an unusual response to treatment by patients having one of the conditions listed below.

Dislocation of coracoclavicular joint
Ulnar neuritis
Cervical spondylosis
Congenital dislocation of the hip
Tennis elbow
Myocardial infarction
Basketball injuries
Football injuries

NOTE: Suggestions for preparation of case reports were published in the October 1957 issue of the *Review*, pages 666-667. Reprints of the suggestions may be requested by writing to the *Physical Therapy Review*.

Proprioceptive Neuromuscular Facilitation Film

A 35 minute color film with sound is available to chapters and schools of physical therapy at a rental fee of $10.00. One copy of the film has been given to the Association by the California Rehabilitation Center. Requests from states east of the Mississippi should be directed to the American Physical Therapy Association, 1790 Broadway, New York 19, New York; rental is payable to the American Physical Therapy Association. Those west of the Mississippi should write to California Rehabilitation Center, 2600 Alameda, Vallejo, California; rental is payable to the California Rehabilitation Center. All requests should be submitted two weeks in advance of date of showing. Alternate dates are desirable since both copies may have prior bookings.

Suggestions from the Field

A-K Amputation Exercise Cuff

Donald Dykinga, B.A., B.S.

This is a specially designed cuff for patients who have above-knee amputations to wear during heavy resistive exercise. In exercising the stump, it is extremely difficult to fasten a strap for attachment of weights that is comfortable and at the same time remains stationary.

In designing a cuff, it was found that when weights are applied, any perfectly round strap will slide off the end of the stump. If a strap is narrow, increased pressure per square inch results in pain. To minimize or eliminate pain an adjustable, 5 inch wide, cone-shaped cuff was made of strong but supple elk hide. To prevent slipping, two elastic straps 1½ inches wide were fastened to the anterior and posterior surfaces of the cuff; in turn, the straps were hooked to a 3 inch belt around the patient's waist. (Fig. 1). The outer surface of the cuff requires seven D rings evenly spaced for weight pan or pulley attachment. The arrangement of the D rings permits performance of hip flexion, extension, abduction, and adduction exercises without rotating the cuff.

Patients who have used the new cuff experienced no pain, even while doing heavy resistive exercise. They reported complete comfort and no fear of the cuff slipping off the stump.

Director, Physical Therapy Department, Illinois Masonic Hospital, Chicago.

Figure 1. Patient doing hip flexion exercise.

Lengthening Your Life Span

Returning to his laboratory from a brief September, 1928, vacation, Dr. Alexander Fleming noticed that one of the bacteria colonies left to grow during his absence was "spoiled." A stray mold, such as is commonly found on bread, had settled on the culture. Thinking it ruined, the Scottish scientist picked up the dish to discard it, when he took a second look—and that chance observation ushered in a new era in medical progress. From this spoiled culture came *penicillin*, a drug destined to save countless thousands of lives, a drug that would add years to the lives of countless Americans.

Today, Americans are no longer willing to allow men of Dr. Fleming's genius just to wait on chance to make their great discoveries. Instead, we are investing millions of dollars every year, through both tax dollars and voluntary gifts, in medical research. But basic knowledge and great breakthroughs like that of Dr. Fleming are not easily come by. To help support the kind of unrestricted research that resulted in Dr. Fleming's discovery of penicillin, a new Medical Research Program has been established by the National Fund for Medical Education and will be included in the United Fund or Community Chest campaigns of many communities across the nation this fall.

Fortunately, as the Nobel-winning scientist commented later, he was not at the time engaged in project research—research that would have confined his efforts to one specific problem—and was therefore able to devote his full time to investigating his chance discovery.

As Dr. Fleming looked closer at the uninvited mold, he noticed a clear transparent ring around it. On the outside of the ring were living bacteria. Seemingly, some substance secreted by the mold had stopped the growth of germs in its immediate vicinity.

A crude broth was made up from the blue mold and tested on surface infections such as sties and boils. It proved effective and the next year Dr. Fleming wrote a paper modestly suggesting that penicillin might be "an efficient antiseptic for injection into areas infected with microbes sensitive to it."

Ten years later two scientists were studying Dr. Fleming's work on another discovery he had made—*lysozyme*, the agent in tears that dissolves germs to protect the eyes. They came across his paper on penicillin, and both realized it might be highly effective as a germicide, or germ killer, if used within the body. By early 1941, penicillin was ready for trial on a human being.

Unfortunately, their supply gave out before their first patient, a British police officer suffering from blood poisoning, had recovered. While they were desperately trying to produce more serum, the officer had a relapse and died, but there could be no doubt of the effectiveness of the new drug.

The next year Dr. Fleming himself administered penicillin for the first time, and with happier results. A personal friend of his was dying of meningitis. The entire supply of the drug available in Britain was turned over to its discoverer. A month later Dr. Fleming's friend walked out of the hospital, miraculously rescued from certain death, and the new era in medicine was firmly launched.

Why had it not occurred to Dr. Fleming in 1928 that penicillin might be most effective as a germicide within the body? Ten years later the possibility seemed almost obvious. The answer lies in a revolutionary discovery made in 1934 by a German bacteriologist named Gerhard Domagk, who gave mankind sulfonamide, the first of the sulfa drugs.

Prior to that time, most doctors and medical researchers were not internally minded; it seemed too obvious to them that the iodines and acids that killed a germ in a flesh wound would also kill the patient if administered internally. The pros and cons of this had been a lively topic and, despite such successes as Dr. Paul Ehrlich's internally injected salvarsan to combat syphilis, most medical men were not convinced.

Sulfonamide, a coal tar derivative, was first synthesized in 1908 by a young Austrian, Paul Gelmo. Gelmo presented a paper on his discovery to the Vienna Institute of Technology and then faded into obscurity. Over 20 years passed before his work, hidden in the literature of dyestuffs, was brought to the attention of Gerhard Domagk. Domagk was a disciple of Ehrlich and was looking for a germicide that would work within the body. He became intrigued by sulfonamide and, continuing Gelmo's work, produced a red dye known as *prontosil*.

While Dr. Domagk was experimenting with prontosil by injecting it into diseased mice, his small daughter pricked her finger with a knitting

needle—two incidents totally unrelated until fate intervened.

The pricked finger was forgotten for a few days until, suddenly, blood poisoning set in. Every remedy known to medicine was tried to no avail, as the child drifted closer to death. Finally, in desperation, her father injected prontosil into the feverish little girl.

The results were miraculous. The fever broke abruptly and in only a short while the child had recovered completely. The first of the "miracle drugs," drugs to combat germs internally, had saved its first human life—the daughter of its discoverer.

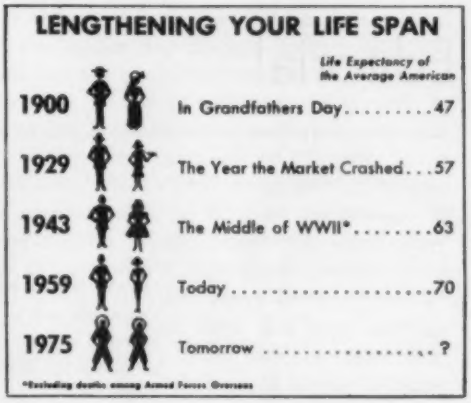
Nine years later, the first member of another famous drug family, the "mycins," made its appearance. This group was destined to become more prominent medically and offer more relief from disease than even the celebrated sulfa clan. *Streptomycin* was the forefather of this family. Its discoverer, Dr. Selman A. Waksman, of Rutgers University, spent almost a full lifetime, 40 years, developing it.

As an undergraduate of Rutgers, Waksman became interested in organisms he found in the soil. After receiving his degree, he pioneered research in these organisms, now known as *actinomycetes*. It was slow, laborious work, but, as the years wore on, Dr. Waksman learned more and more about them and the medical possibilities became exciting.

When streptomycin appeared in 1943, doctors greeted it as a godsend. It would be impossible to guess how many lives the drug has saved, but across the country and throughout the world there are thousands upon thousands of people today who owe their lives to the dogged persistence of a scientist who was curious about the soil.

The annals of medical progress are filled with stories of hundreds of men like these. Many more will be added before the final chapter is written and the last page turned—when mankind is finally completely free from disease.

Shortly before his death, the famed Louis Pasteur commented, in reference to yellow fever and the black plague: "Must we not believe that a day will come when preventative measures that are easy to apply will arrest these plagues..." The time will also surely come when leukemia,



cancer, and all of the other dreaded killers of today will be all but erased from the memory. Just as most doctors today have never experienced the helplessness doctors felt only 25 years ago when a patient was stricken by pneumonia—the anxious wait to see if he would survive the crisis that came after the ninth or tenth day—so will doctors tomorrow forget some of the hopelessness they feel today.

Because of the discoveries of men like Fleming, Domagk and Waksman, people today can expect to live fully 23 years longer on the average than did their great-grandparents. But this is only the beginning, as our scientific researchers penetrate deeper and deeper into the area of fundamental knowledge of how our bodies work.

The great miracles of modern-day medicine are the payoff on the basic knowledge learned yesteryear. Today, we are coming to the point where every new fundamental discovery receives almost immediate examination from the point of its possible practical application. Unfortunately, our storehouse of such knowledge is beginning to run dry, as applied research occupies the center of the stage. But lately, through such means as the proposed "noncategorical" grant program of the National Institutes of Health and the newly established Medical Research Program of the National Fund for Medical Education, both tax dollars and voluntary gifts will be going in larger quantity into basic, unrestricted research—the kind of research which led Dr. Fleming to penicillin.

Editorial

The White House Conferences

Two White House Conferences of particular interest to physical therapists are to be held within the next year. The first is the White House Conference on Children to be held March 28 to April 2. The second is the White House Conference on Aging to be held in January, 1961.

The White House Conference on Children is the sixth such conference held in the last half-century. The White House Conference on Aging is the first such meeting. Both, however, have a number of things in common.

First, they are essentially citizens' conferences and are being preceded by nearly two years of advance "grass roots" planning and discussions in each of the states. Many physical therapists have participated in these state conferences and committees. Second, they are conferences directed toward social planning and action in meeting the total needs of children and of older people.

There is another common characteristic which makes them significant for the profession of physical therapy—disability. Although disability is not confined to these two groups on either end of the chronological spectrum, they are its special targets.

For these two meetings, we have available the best statistical data on the extent of disability among these two groups in our history. This results from the United States National Health Survey conducted by the Public Health Service, Department of Health, Education, and Welfare. The survey is continuous, each week covering a random sample of the civilian noninstitutional population of the United States. A recent report of the National Health Survey on children and youth indicates, more precisely than ever before, the extent of disability among our younger population.

Approximately 9,000,000 children under the age of 15 were found to have some type of chronic disability and 600,000 (1.2 per cent of the children under 15) had disabilities that meant a partial limitation of activity. For school children, this means being limited to certain types of schools, being limited in the amount of school attendance, or being limited in extra-curricular activities. For preschool children, this means being limited in the amount or kind of play with other children. Another 100,000 children (0.2 per cent of the children under 15 years of age) had major activity limitation.

A comparable report from the National Health Survey of disability among older persons is not yet available. We do know, however, that 50,000,000 people in the United States are 45 years of age or more and that 15,500,000 are 65 or older. We also know that in 1950 nearly 4,000,000 people in this country, age 45 and over, had been disabled for more than three months.

Because of the unique concern of the physical therapist for physical disability, the extent of physical disability among the younger and older populations of the United States does not come as a surprise to physical therapists. They see it daily. It will come as a surprise, however, to many who are concerned with these two national meetings.

Few professional persons realize to what degree physical disability affects the lives of both youngsters and oldsters. One of the contributions of these two White House Conferences will be to create such an awareness. This can be done with statistical evidence.

To let such persons and even many professional persons realize that through modern rehabilitation methods something positive can be done to eliminate or alleviate this disability and its damaging physical, social, emotional, and vocational sequelae is more difficult. Statistics are of little help. This can be done only through creating an understanding by them of the concepts of rehabilitation and the contribution which physical therapy makes toward achievement of rehabilitation. The two White House conferences and the committee work and state meetings preceding them provide such an opportunity which every physical therapist should recognize and utilize.

EUGENE J. TAYLOR

Department of Physical Medicine and Rehabilitation

New York University-Bellevue Medical Center

Does Licensure Elevate Professional Income?

The primary purpose of a physical therapy practice act is to protect the public; there are, however, concomitant benefits to our profession and others. Legal adoption of our Code of Ethics whereby the practice of physical therapy is limited to those who practice under the direction of a licensed physician is, we believe, in the best interest of patients, physicians, and hospitals as well as physical therapists.

In an article entitled "Factors That Will Shape Future Hospital Costs,"[1] Dr. Henry N. Pratt, M.D., Director of the New York Hospital, New York City, enumerates 12 factors; the sixth factor is "The paramedical professions mentioned above (including physical therapists) work through their national organizations steadily to improve their educational, economic, and social status. This has been accomplished through the establishment of higher educational requirements, through pitting one using agency against another in pushing wages up and through encouraging legal licensure. These in themselves may be desirable objectives, but they have undoubtedly pushed hospital costs up. Since there seems to be no end to this trend, one can confidently predict that future costs will be affected by it."

We do not know what the experience of other paramedical professions has been in regard to Dr. Pratt's challenging statements. It is the belief of our Association that "higher educational qualifications" are necessary and are related to continuing improvement in patient care. The "pitting of one agency against another in pushing wages up," if it has occurred, has not been fostered by this Association; we believe there are other factors involved, such as the ever increasing demands for personnel. Dr. Pratt implies that licensure may have a bearing on the economic status of physical therapists. Dr. Pratt is correct in his understanding that this Association has promoted, through its chapters, the enactment of

[1] Hospitals, Vol. 33, No. 20, Oct. 16, 1959.

physical therapy practice acts; but study of the factors here involved—licensure and increased salaries—reveals that there is a negative correlation between these two factors.

The nationwide personnel policies survey conducted by the APTA in 1956 was reported in the February 1957 issue of the *Review*. The results of a sample survey of members attending the 1959 Annual Conference in Minneapolis have been reported in the November 1959 issue. In reporting the 1956 survey, states were grouped into nine regions as defined by the United States Public Health Service. Median salaries for several levels of positions including that of staff physical therapist were reported for each of the nine regions. In the following table, the median salaries for staff physical therapists by regions, ranked with the highest salaries first, are shown; and the years of enactment of the 36 physical therapy practice acts are inserted following the names of the states where such laws are in effect.

Mountain—$4,250.00

Arizona (1952)	Utah (1959)
New Mexico (1953)	Idaho
Nevada (1955)	Montana
Colorado (1959)	Wyoming

Pacific—$4,250.00

Washington (1949)	California (1953)
	Oregon (1959)

East North Central—$4,250.00

Illinois (1951)	Indiana (1957)
Wisconsin (1953)	Ohio (1959)
	Michigan

East South Central—$4,000.00

Tennessee (1955)	Alabama
Kentucky (1958)	Mississippi

West South Central—$4,000.00

Oklahoma (1951)	Louisiana
Arkansas (1953)	Texas

West North Central—$3,750.00

Minnesota (1951)	North Dakota (1959)
South Dakota (1955)	Iowa
Nebraska (1957)	Kansas
	Missouri

South Atlantic—$3,750.00

Maryland (1947)	South Carolina (1952)
Florida (1951)	Delaware (1955)
Georgia (1951)	Virginia (1958)
North Carolina (1951)	District of Columbia
	West Virginia

Middle Atlantic—$3,750.00

Pennsylvania (1913)	New York (1926)
	New Jersey

New England—$3,250.00

Connecticut (1941)	Maine (1955)
Massachusetts (1951)	Vermont (1957)
New Hampshire (1951)	Rhode Island

Although physical therapists might hope that their efforts toward enactment of physical therapy practice acts might improve their economic status, if past experience counts, we must face the fact that licensure has had little bearing on the upgrading of salaries. The two regions where, according to Dr. Pratt's hypothesis, the physical therapy practice acts should have raised salary levels by the time of the 1956 survey are the Middle Atlantic States and New England. The most convincing comparison may be made in relation to the East South Central region where there was only one year of experience under one law before 1956; in this region, physical therapists' salaries were higher than in the Middle Atlantic region where practice had been regulated by law in two of three states for three decades before 1956.

We do not deny that physical therapists' salaries are rising; the sample survey reported in the November, 1959, *Review* reveals that the over-all median salary for staff physical therapists may be approaching $4,750 compared with the national median in 1956 of $3,750. We say "may be" because this was a sample and because only 22 per cent of the physical therapists attending the 1959 Conference came from the lower income East Coast regions where 41 per cent of our active members are employed.

We must agree that hospital costs are rising even though licensure has not forced salaries upward. Physical therapists must share Dr. Pratt's concern for rising costs; Dr. Pratt's concern is most certainly shared by hospital administrators across the land. It behooves each of us who is employed in a hospital, or for that matter in any agency, to scrutinize our practices and attitudes to be certain that we are helping in every possible way to reduce costs or to prevent an avoidable rise in costs.

The physical therapy department is a part of

the whole; its staff members belong to the hospital family. The hospital administrator, as the head of the family, has a right to expect from physical therapists, loyalty, efficiency, and understanding of the hospital's needs and objectives. He has a further right to be accurately informed of his professional personnel's goals and objectives; and, in this instance, to understand our legislative program and to know that licensure seems to have had no influence on increasing hospital costs.

DOROTHY E. VOSS
Consultant
Chapter and Membership Department

Letters to the Editor

DEAR EDITOR:

Re: Partridge, M. J., Walters, C. E.: Participation of the Abdominal Muscles in Various Movements of the Trunk in Man, *Physical Therapy Review*, 39: 791-800, December, 1959

I read the above paper with great interest, since the results of this type of investigation are ultimately the "tools" of the practicing physical therapist. As a teacher of low frequency electrotherapy, it was satisfying to note that the chief author is a physical therapist and that the recording equipment is an investigating tool which physical therapists have too long ignored—the electromyograph.

In addition to congratulating the authors on a well written paper, my purpose in writing is to determine from the authors some description of the placement of the skin electrodes for the recording of the electromyogram of the "middle fibers of the internal oblique muscle," and in light of the results, possibly a bit more discussion of the role of the internal oblique muscle in the various movements described.

According to available literature, no author has been convinced of the role of the internal oblique muscle in many of the same movements described (standing, sitting, trunk curl, hip roll, pelvic tilt, breathing); the problem being the location of the muscle and the difficulty in the interpretation of the electromyogram when either skin or needle electrodes are used.

One group (Floyd, W. F., Silver, P. H. S., J. Anat. 84: 132-145, 1950) describes a "retroaponeurotic" portion of the internal oblique muscle located essentially in the lower quadrant of the abdomen; but even in this instance, there appears to be much difficulty in analysis since the differentiation of the action of the external oblique, transversus abdominis, cremaster, and psoas muscle has not always been possible.

Finally, is it possible to determine the activity of the entire internal oblique muscle from a pick-up in this one area as is suggested in the paper?

As stated earlier, the authors are to be congratulated for their contribution to our kinesiological knowledge and I, for one, would welcome more investigations of muscle activity with modern equipment by physical therapists who, after all, are constantly evaluating muscle function.

Very truly yours,
ALFRED J. SZUMSKI
Assistant Professor
Medical College of Virginia

TO THE EDITOR:

Permit me to preface the ensuing discussion with the following statements. First, I with to extend my appreciation to Mr. Szumski for his comments concerning the paper "Participation of the Abdominal Muscles in Various Movements of the Trunk in Man." Second, I wish to correct an unintentional implication that was brought out by the question "Is it possible to determine the activity of the entire internal oblique muscle from this localized pick-up?" The answer undoubtedly is *no*. Since the illustrations are labeled internal oblique, middle fibers, the implication desired is that any reference to internal oblique function in the text refers only to those fibers being recorded with this particular electrode placement.

The placement of the internal oblique (middle fibers) recording electrodes for this study was as follows:

One electrode was located just medially and slightly superior to the anterior superior spine of the iliac crest. The other electrode was placed superior and medial to the first electrode at a distance of 3 cms. in line with the diagonal group of fibers as they are directed upward and medialward. The electrodes were secured to the skin overlying those fibers which were palpated as participating most during a manual muscle test for internal oblique function. Some anatomy texts show that the overlying external oblique in this area may be predominantly fascia; thereby rendering those fibers of the internal oblique in the region accessible to palpation. If the fibers can be palpated under a specific set of circumstances the possibility of recording the electrical potential exists. Using subjects who have well defined musculature and very little subcutaneous tissue

greatly enhances the success of this type of investigation.

The question naturally arises concerning whether this "pick-up" is recording from the external oblique, transversus abdominis, cremaster, or psoas muscles. The opinions expressed in this paper regarding the function of the internal oblique (m) as opposed to the external oblique are based on: 1) electrode placement as described and 2) the changes in the patterns of electrical activity when different trunk movements or postures are imposed. For example, when the subjects assume a sitting or standing position the external oblique leads are quiescent. Floyd and Silver (J. Anat., Lond., 84: 132-145, 1950) reported similar findings on the same muscle using a different electrode placement. Rotating the trunk on the pelvis or performing a pelvic tilt while in this position does not increase the level of activity of the external oblique leads to any degree but does alter the internal oblique leads remarkably. Because of this particular behavior the functions of the abdominal muscles can be more clearly differentiated and analyzed.

Since in the female this muscle is largely represented by fascia rather than by muscular fibers (Cunningham's *Textbook of Anatomy*, p. 440), recording from the cremaster muscle is not likely. Picking up the electrical potential of the psoas muscle requires a needle electrode insertion using a posterior approach and the chances of recording from this muscle with skin electrodes through the anterior abdominal wall is remote. One authority (Gasmajian, John V., Anat. Rec. 132: 127:132, October, 1958) studied the iliacus with a needle electrode and found a continuous level of activity when the subjects were standing. However, in the sitting position, this level of activity was absent. Figure 3 (page 793, Phys. Ther. Rev., December, 1959) demonstrates that the level of activity recorded from the internal oblique (m) pick-up is unchanged from sitting to standing unless a specific trunk motion is performed. Judging from the function of the psoas and iliacus and the distance of these electrodes from their active fibers, it does not appear that the internal oblique (m) pick-up as described by us was seriously involved in recording from the iliopsoas. In fact, it would be a most welcome event if it were possible to record from the iliopsoas with electrodes.

The probability of recording from the transversus abdominis cannot be overlooked. According to most authorities the transversus and lower fibers of the internal oblique have similar functions (compress the lower abdominal wall), but nowhere can I find a suggestion that the transversus participates directly to rotate the thorax on the pelvis or visa versa.

The participation of the internal oblique (m) in performing sit-ups and trunk curls with or without rotation is minimal in our experience. These observations were documented in another paper by us (Walters and Partridge, Am. J. Phys. Med., 36: 259-268 October, 1957). Indeed, we were extremely disappointed during some of the experiments when this muscle did not respond according to expectations.

This lack of activity led us to make the observations of the pelvic tilt and rotation maneuvers in the sitting and standing positions. It became clear to us that we were witnessing, as Beevor stated, what the muscle "does do." To my knowledge only Floyd and Silver have attempted to study the internal oblique electromyographically. Our findings were in agreement with theirs in the two similar activities studied—standing and forced expiration. They did not report on rotation movements, trunk curl, or hip roll.

The question of the validity of electromyographic investigations must always be considered. Mr. Szumski has taken the responsibility to carefully analyze the author's method. Permit me to offer an example—Floyd and Silver show that the rectus abdominis is dominant during head raising and that the external oblique activity is minimal. Our observations showed that both the rectus and the external oblique participated equally during head raising. Both observations are in agreement when one analyzes the electrode placement. Floyd and Silver used the posterior fibers of the muscle and we used posterior, middle and anterior fibers. Our records agree with theirs in relation to the posterior fibers but show the dominant role played by the anterior fibers of the muscle.

It is wise to keep in mind the statement of Rushmer (Physiol. Rev. January, 1959), "Physiological generalizations are unquestionably applicable only to the conditions under which the data were obtained."

I wish to thank the editors for the opportunity to discuss my favorite subject.

Sincerely,

MIRIAM J. PARTRIDGE, P.T.

Association News

Marriages

Patricia W. Adams, of Storrs, Conn., now Mrs. Patricia A. Gillespie, Storrs.

Carol A. Anderson, of Woonsocket, R. I., now Mrs. Carol A. Gordon, Worcester, Mass.

Barbara J. Bay, of Berkeley, Calif., now Mrs. Barbara B. Goldman, San Francisco, Calif.

Elizabeth Blackman, of Brookfield Center, Conn., to William M. Tolles, Berkeley, Calif.

Katherine Blonski, of Milwaukee, Wis., to Donald Zahorik, Evanston, Ill.

Kay F. Carmichael, of Sacramento, Calif., to Larry D. Field, Santa Ana, Calif.

Ernestine Collins, of Flint, Mich., now Mrs. Ernestine C. Smith, Flint.

Roberta Cooper, of Buffalo, N. Y., to George C. Glass, Buffalo.

Shirley Creswell, of Springfield, Ill., now Mrs. Shirley C. Meissner, Springfield.

Dorothy A. Dow, of Minneapolis, Minn., to Robert E. Sorensen, Minneapolis.

Lois M. Elliott, of San Francisco, Calif., now Mrs. Lois E. Desalernos, San Francisco.

Karen L. Erdmann, of Cleveland Heights, Ohio, to Jack M. Robinson, Cleveland Heights.

Betty L. Garrett, of Cincinnati, Ohio, now Mrs. Betty G. Schmidt, Cincinnati.

Maryann R. Gay, of Springfield, Ill., to Thomas Rozzell, Cincinnati, Ohio.

Margaret Geringer, of Denver, Colo., now Mrs. Margaret G. Cross, Boulder, Colo.

Ruth Haase, of Boston, Mass., to Eugene Hochman, North Hollywood, Calif.

Jean A. Hansen, of Ballston Spa, N. Y., to Roger N. Dokken, Brookline, Mass.

Karen Hecht, of Forest Hills, N. Y., now Mrs. Karen H. Jessum, Rego Park, N. Y.

Mary Hemenway, of Fort Bragg, N. C., now Mrs. Mary H. Mitchell, West Lebanon, Maine.

Elizabeth A. Hill, of Cincinnati, Ohio, to Henry T. Wilson, Cincinnati.

Anne Hocking, of St. Paul, Minn., to Ronald Gower, El Paso, Texas.

Arlene R. Hortop, of Nashville, Tenn., now Mrs. Arlene H. Evans, Nashville.

Margaret Keegan, of Albany, N. Y., to Thomas F. Scully, Jr., Albany.

Nancy Lofgren, of Nashville, Tenn., now Mrs. Nancy L. Cragon, Nashville.

Katherine M. McQuerry, of Palo Alto, Calif., to Leonard King, Palo Alto.

Ruth H. McRimmon, of Greensboro, N. C., now Mrs. Ruth M. Wayne, St. Petersburg, Fla.

Mary Meek, of Palo Alto, Calif., now Mrs. Mary M. Locke, Belmont, Calif.

Mary Montalbo, of Palo Alto, Calif., to Robert B. MacMakin, Palo Alto.

Virginia Mordhorst, of Los Alamitos, Calif., to A. Gordon Harker, Jr., Downey, Calif.

Mary Rohan, of San Francisco, Calif., to F. A. O'Driscoll, Tiburon, Calif.

Marilyn Silvernale, of San Francisco, Calif., now Mrs. Marilyn S. Baum, San Francisco.

Helen Spurdens, of Sewickley, Pa., to Brooks M. Bartlett, Sewickley.

Billie R. Stemler, of Pittsburgh, Pa., now Mrs. Billie S. Lau, Tampa, Fla.

Geraldine Stull, of Huntingdon Valley, Pa., to Frederic S. Dubbs, Jr., Collingswood, N. J.

Dorothy Tappan, of Seattle, Wash., now Mrs. Dorothy T. Wood, Seattle.

Harriet J. Strzelewicz, of Warm Springs, Ga., to D. E. Williams, Charleston, W. Va.

Darlene Thompson, of Fort Belvoir, Va., to William W. Barker, Jr., New Orleans, La.

Shirley Timm, of Yakima, Wash., to Jack M. Haberman, Ellensburg, Wash.

Marilyn Walker, of West Covina, Calif., to Robert Crow, Concord, Calif.

Patricia A. Watson, of Saranac Lake, N. Y., to John C. Richards, Norfolk, Va.

Dorothy Weekes, of Freeport, N. Y., now Mrs. Dorothy W. Oswald, Oceanside, N. Y.

Sarah Young, of Washington, D. C., now Mrs. Sarah Y. Bowman, Savannah, Ga.

Members' Publications

Mildred E. Judge and Margaret C. Parizeau are co-authors with Paul F. Wehrle, M.D., Ory Carbonaro, Myron Miller, M.D., and Stanley Zinberg of "Disability Associated with Echo Virus Infections" published in the *New York State Journal of Medicine*, Nov. 1, 1959.

George D. Brunner and Jo Ann McMillan are co-authors with J. F. Lehmann, M.D., and A. J. Martinis, M.D., of an article entitled "Ultrasonic Effects as Demonstrated in Live Pigs with Surgical Metallic Implants" published in the *Archives of Physical Medicine and Rehabilitation*, November 1959.

Nora Staael is co-author with John A. Evert, M.D., and Patrick Harbine of "Crutches for a Patient with Severe Upper Extremity Impairment" published in the *Archives of Physical Medicine and Rehabilitation*, November 1959.

Mary McMillan's Photograph

As a commemoration of Mary McMillan, our Founding President, friends and members of the profession may wish to have a print of the portrait-photograph which appeared in the February 1960 issue of the *Review*. The prints are suitable for framing and may be obtained from the National Office at a cost of $1.00 each.

New Student Members

University of Texas

Ann C. Caskey
Jesse A. Coufal
Kathryn J. Grant
Barbara L. Grow
Randi Henriksen
Janis G. Huhn
Dorothy J. Hutcherson
Martha D. Hutcherson
Lois E. Stubbs
Kaye Triplett
Josephine C. Williams

Letter from a New Member

December 11, 1960

DEAR MISS BLAIR:

I have never in my life been so happy when I wrote a check as when I filled out this one for my first membership fee in the APTA. Thank you so much for all the kindness I have met from the Association since I first wrote you from Canada.

Now that I have passed my examination would it be possible that I could buy the APTA's shoulder emblems for the uniforms? If so, would you send me some? I have envied the other therapists the right to wear those ever since I entered the States.

Once more, thank you.

Yours truly,
INA HELWEG
Des Moines, Iowa

Nominations for Directors

Nominating Committee candidates will appear in the April issue. The full report of the Nominating Committee was published in the February *Review*, page 144.

FOR DIRECTOR

(Three to be elected to serve terms of three years)

Thelma M. Holmes, Supervisor of Physical Therapy and Rehabilitation, Visiting Nurse Service of Rochester and Monroe County, Rochester, New York

Association member since 1946

Chapter positions: Vice President, New York; Corresponding Secretary, New York; Corresponding Secretary, Western New York; Chairman, Public Relations Committee, Western New York; Chairman, Newsletter Committee, New York; Chairman, Recruitment Committee, Western District, New York; Chairman, Publicity Committee, Western District, New York

Louise Reinecke, Physical Therapist in the office of Emil D. W. Hauser, M.D., and Part Time Instructor, Course in Physical Therapy, Northwestern University Medical School, Chicago

Association member since 1942

Chapter positions: Vice President, Illinois; Chief Delegate, Illinois

National positions: Editor, *Physical Therapy Review*; Associate Editor, *Physical Therapy Review*

Beverly A. Schaefer, Director, Texarkana Society for Crippled Children, Texarkana, Arkansas

Association member since 1947

Chapter positions: Director, Arkansas; Chairman, Recruitment Committee, Arkansas

Beatrice F. Schulz, Assistant Professor and Director, Department of Physical Therapy, Washington University School of Medicine, St. Louis

Association member since 1944

Chapter positions: President, Missouri; Director, Eastern Missouri; Chief Delegate, Eastern Missouri; Chairman, Eastern District, Missouri; Chairman, Legislation Committee, Eastern Missouri

National positions: Vice President, School Section; Member, Nominating Committee; Member, Exhibits Committee; Member, Conference Program Committee

Lola E. Smith, Chief Physical Therapist, Drs. Houston, Roy, Faust, and Ewin, New Orleans

Association membership since 1946

Chapter positions: Vice President, Louisiana; Chief Delegate, Louisiana; Chairman, Public Laws Committee, Wisconsin; Chairman, Newsletter, Wisconsin; Chairman, Public Relations Committee, Mississippi

Barbara C. White, Curriculum Chairman, College of Health Related Services, J. Hillis Miller Health Center, University of Florida, Gainesville

Association member since 1937

Chapter positions: President, New York; Secretary, New York; Secretary, Hawaii; Treasurer, Connecticut; Chairman, Exhibits Committee, Connecticut; Chairman, Recruitment Committee, District of Columbia; Chairman, Recruitment Committee, Northeast District, Florida

National positions: Vice President; Educational Secretary, National Office; Chairman, Advisory Committee on Chapter Activities; Member, APTA-NFIP Joint Committee on Education; Member, Conference Program Committee; Member, Structure Study Committee; Member, Nominating Committee

Chapter News

Northern California

The January program included demonstrations of research activities in physical therapy, speech and hearing, and dermatology at the Medical Center, Stanford University.

Southern California

A civil defense workshop sponsored by the state regional disaster office was open to the Chapter members. Planned for all medical personnel, the program featured the transformation of a junior high school into an emergency hospital.

Delaware

A recent program announcement gave the topic for the December meeting as "Legal Aspects of Our Profession."

District of Columbia

The Chapter newsletter, called the *D. C. Current Newsletter*, gives brief biographies of new members.

Florida — West Coast District

Three of the District members appeared on a local TV program, "Careers." The film, "Within Your Hands," supplemented the members' panel discussion.

Georgia

The winter Chapter meeting held at Warm Springs was devoted to the treatment of hemiplegia and rheumatoid arthritis, as well as a tour of the facilities.

Indiana — Central District

The *Nameless Newsletter* reprints a letter from the chief delegate in which the action of Annual Conference is reported. Other items include: a résumé of the previous meeting, listing of District officers and members.

Massachusetts — Western District

A recent program on "Joint Adhesions" was presented by a local physician.

New York — Greater New York District

Does the prescription fit you?

Name . . . you . . . **Age** . . . ? . . . **Location** . . . unknown . . .

Diagnosis . . . lapse of memory . . . **Prognosis** . . . excellent . . .

Disability . . . forgetting to check calendar . . .

Aims 1. to attend every meeting of the District

2. to be a worthwhile contributor to the District, Chapter and National Organization

Contraindications 1. being late to meetings

2. planning other activities on meeting nights

New York — Hudson Valley District

The December program was a "Symposium on Public Health Physical Therapy." "Spasticity Involved in Upper Motor Neuron Lesions" was also discussed.

Ohio

The fall Chapter newsletter contains a report from each District. The Districts' officers are listed as well as committee chairmen, projected programs for the year, and membership news.

Oklahoma

A recent speaker at the Chapter meeting discussed "The Psychological Implications Accompanying Recent Injury."

Oregon — Southern District

The District membership list and schedule for the year provide the members with the dates of the meetings from October, 1959, to September, 1960. The January meeting was on "Traction, its Indication and Purpose—Supplemental Modalities."

Pennsylvania — Eastern District

The District's December newsletter, published under the name *The Paptaed Scoop*, announced the program subject of "Symbolism."

The columns of the newsletter are identified by such names as Our Friendly Neighbors—the advertisers; In Anticipation—notice of the next District meeting; In Retrospect—comments on

previous meeting; State Orbit—the dates for the next state board examinations and the annual Chapter meeting.

Texas — Southeastern District

"Brainstorming," the program for the December meeting, permitted the members to present problems of a clinical nature to a panel of experts.

Texas — West Texas District

The first District meeting of 1960 instituted a series of programs in which a panel of members present problems and methods of handling specific situations. The January topic was cerebral palsy.

Virginia

Among the committees listed in the Chapter newsletter, *The Virginian*, is a Student Relations Committee. The Committee met with junior and senior physical therapy students to explain the APTA and the value of student membership.

"Motor Skills" were discussed and demonstrated by a group of physicians and physical therapists at a recent program meeting. "A Paraplegic's Way of Life" was the topic for the February meeting.

Wisconsin

Excerpt from Chapter newsletter.

Your organization can mean this to you—if you participate.

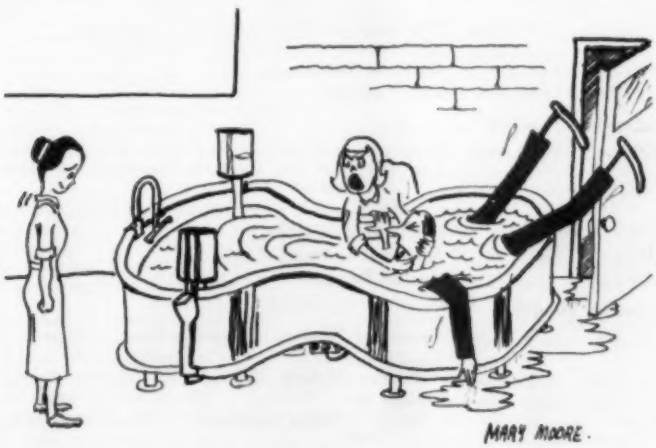
Adventure in learning, in doing, in being. These are but a few of the adventures open to the physical therapist of today. Adventure is open only to the courageous who will learn new ideas, develop new ideas, and try new ideas.

Progress is professional growth. Inquiring minds, eyes, and souls help to pave the road but also needed are professional responsibility, interest, and service. Apathetic membership is like dry rot and can spread easily. The roots of any tree must be firm and healthy—so must the membership be alive and strong in order that the whole of the profession may grow and flourish.

Truth—the constant search for truth is paramount in research, in daily work, in association with patients, colleagues and in self evaluation. Inquiring minds, inquiring eyes, and inquiring souls are tools necessary to obtain truth.

Appreciation for the tool of knowledge—that is our heritage—for the perserverance of our predecessors, and for vast horizons which beckon the courageous pioneer of today!

MARGARET M. PRIOR
D. LAVONNE JAEGER



"How many times have I told you to tell the doctors about our new tank!!?"

Pittsburgh • June 26-July 1 • Penn-Sheraton Hotel

1960 CONFERENCE

Business Meetings and Program Schedule

June 23, 24, and 25 — **Board of Directors Meetings**

Sunday, June 26

9:00 A.M. — 5:00 P.M.
Section on Education
Self Employed Section
Public Health Section

5:00 P.M. — 10:00 P.M.
Pa Pitt's Melting Pot—Pennsylvania Chapter, Host
Pa Pitt Picnic and Square Dancing

Monday, June 27

9:00 A.M. — 5:00 P.M. — **General Registration**

9:00 A.M. — 12:00 Noon — **Delegates' Registration**

10:00 A.M. — 12:00 Noon
Group Meetings—Research Group, State Examining Committee Meetings, Legislation, and others to be announced

2:00 P.M. — 5:00 P.M.
Opening Session—Greetings, President's Address

Tuesday, June 28

9:00 A.M. — 12:00 Noon
THE NEED FOR REHABILITATION IN INDUSTRY
MAINTAINING THE HEALTH OF THE WORKER

2:00 P.M. — 5:00 P.M. — **House of Delegates**

7:00 P.M. — 10:00 P.M. — **Film Theater**

Wednesday, June 29

9:00 A.M. — 12:00 Noon
HUMAN FACTORS ENGINEERING: WHAT IS IT?
THE ROLE OF THE PHYSICAL THERAPIST IN HUMAN FACTORS ENGINEERING
FATIGUE

2:00 P.M. — 5:00 P.M. — **House of Delegates**

6:00 P.M. — 7:00 P.M. — Reception for Board of Directors

7:30 P.M. — **Annual Banquet**

Thursday, June 30

9:00 A.M. — 12:00 Noon
Concurrent Sessions—ASSESSMENT OF FUNCTION
Session A
MANUAL MUSCLE TESTS, GROSS MUSCLE TESTS, ACTIVITY TESTS
Session B
MOBILITY TESTS, ELECTRICAL TESTS, CIRCULATORY AND RESPIRATORY TESTS

2:30 P.M. — 5:00 P.M. — Original Papers (Prepared and read by members)

7:00 P.M. — 10:00 P.M. — Chapter Workshops

Friday, July 1

9:00 A.M. — 12:00 Noon *Concurrent Sessions*—PHYSICAL THERAPY FOR TRAUMA AND DISEASE

Session A
SPRAINS, STRAINS, CONTUSIONS
BURNS
ARTHRITIC CONDITIONS

Session B
SOFT TISSUE SYNDROMES, HAND INJURIES, PERIPHERAL NERVE LESIONS

Session C
LOW BACK DISABILITIES, SPINAL CORD INJURIES, FRACTURES AND DISLOCATIONS

General Session
THE ROLE OF THE PHYSICAL THERAPIST IN THE INDUSTRIAL PICTURE

2:00 P.M. — 5:00 P.M. Program Tours to selected hospitals, rehabilitation centers, and outpatient treatment centers
(Details to be announced in April *Review*)

Conference Facts

Hotel

The Penn-Sheraton, facing the newly developed Mellon Square.

Rates

Single rooms	$ 8.50 to $14.00
Double bedded room for two, per person	$ 6.68 to $ 8.75
Double bedded room for one person	$ 9.85 to $14.00
Twin bedded room for two, per person	$ 6.92 to $13.00
Twin bedded room for one person	$ 9.85 to $22.00
Parlor and twin bedroom	$27.00 to $40.00
Parlor and two twin bedrooms	$57.00 to $60.00

All rates subject to 4 per cent state sales tax.
Third person in room, $3.00 additional
Family plan, children under 14 free

Hotel Reservations

Send your reservations to the Penn-Sheraton at least 30 days in advance. The Hotel will acknowledge reservations at the nearest available rate if a room at the requested rate is not available. Persons rooming together should send in only one reservation card indicating the number of persons sharing accommodations. *Note:* For your convenience a reservation card is included in your dues notice.

Registration

Active, inactive and foreign probationary members	$6.00
Student members	$2.00
Nonmember physical therapy students	$4.00
Nonmember graduates of approved schools	$15.00
Members of physical therapy organizations affiliated with the World Confederation for Physical Therapy	
Visitors	$6.00
Residents of this country	$15.00

All persons registering will be required to present professional identification.

For the convenience of all, members are requested to register in *advance*. Otherwise, you must present your membership card at the Conference registration desk.

Allied professional persons are invited to attend by presentation of credentials and at a courtesy fee of $2.00

Complimentary registration is cordially extended to physicians and administrators upon presentation of credentials.

Exhibits

Commercial exhibits: Applications should be directed to Gordon M. Marshall, Exhibits Manager, 30 West Washington Street, Chicago 2.

Scientific exhibits: A limited number of scientific exhibits are accepted and assigned by the American Physical Therapy Association.

Social Events

Good cheer and fellowship for all! On Sunday evening the Host Chapter will welcome you at "Pa Pitt's Melting Pot." Afterwards there will be a buffet—"Pa Pitt Picnic"—and square dancing. Wednesday evening is set aside for the traditional and informal banquet with entertainment scaled to your enjoyment. Register in advance and take advantage of the combined price of $12.00 for these two highlighted events. If tickets are purchased separately, prices are: Buffet $6.00; Banquet $7.50

Film Theater

Films are accepted for showing during the Annual Conference on the basis of special interest and relation to the scientific program. Members or organizations desiring to show movies, slides, or filmstrips may apply for inclusion in the program. Applications should be sent to the American Physical Therapy Association before May 1, 1960, and should contain the following information:

Title of film, slides, or filmstrip; producer and/or distributor's name and address; year produced;

Technical data: black and white, or color; sound or silent; film or slide size; running time of film, or number of slides and time needed to show them;

Those films and slides which will be of greatest interest to the audience will be selected.

2,500 Can Drive In A Day!

For the first time in several years, the Conference site will be readily accessible to at least one third of our active membership. For many members, the 1960 Conference will be their first; for others, it may be the twenty-first! First or twenty-first, the Pennsylvania Chapter through its Western District plans to make it the best! All members east of the Alleghenies should plan to meet their western friends at the Gateway to the West! Freeways, toll roads, turnpikes, and superhighways will lead you to Pittsburgh! Why not form a car pool with several of your friends and bring them to the Point in Pittsburgh?

Reserve Officers of the Army Can Earn Credit in Pittsburgh

The Commanding General, U. S. Continental Army Command, has approved the awarding of retirement point credits for Army Reserve Officers who attend specified sessions of the American Physical Therapy Association Conference in Pittsburgh, Pennsylvania in June.

Provision will be made for Reservists to register in the lobby of the Penn-Sheraton Hotel.

Military Physical Therapy Symposium
Military Section of the
American Physical Therapy Association

Penn-Sheraton Hotel — Pittsburgh, Pennsylvania

26 June—1 July 1960

Military Chairman—Major Mary E. Frazee, AMSC

The following sessions, by virtue of their military educational value, are included in the symposium and are authorized as military training assemblies. Reserve officers of the Army are therefore eligible to earn training and retirement point credits for attendance at the sessions indicated below providing such attendance at any session is for a period of not less than two hours and registration at each session is accomplished with the individual designated by the Commanding General to accomplish such registration. Not more than one credit can be granted for any single calendar day:

PROGRAM SESSIONS

Monday, 27 June 1960 1400-1700

The Role of the Employer in the Health of the Worker

Tuesday, 28 June 1960 0900-1200

The Need for Rehabilitation in Industry
Maintaining the Health of the Worker

Wednesday, 29 June 1960 0900-1200

Human Factors Engineering: What Is It?
The Role of the Physical Therapist in Human Factors Engineering
Fatigue

Thursday, 30 June 1960 0900-1200

Concurrent Sessions:
Assessment of Function
Manual Muscle Tests, Gross Muscle Tests, Activity Tests
Mobility Tests, Electrical Tests, Circulatory and Respiratory Tests
The Role of the Physical Therapist in the Evaluation of Physical Impairment

Friday, 1 July 1960 0900-1200

Concurrent Sessions:
Physical Therapy for Trauma and Disease
Sprains, Strains, Contusions
Burns
Arthritic Conditions
Low Back Disabilities, Spinal Cord Injuries, Fractures, and Dislocations
The Role of the Physical Therapist in the Industrial Picture

Original Papers for Conference

Members of the Association who have been working on special projects related to physical therapy procedures—research, clinical or laboratory; reviewing results achieved with a group of patients; adaptation or application of new methods of treatment; or any other subject which will advance the profession—should plan now to report their work in Pittsburgh next June.

Two copies of manuscript, typed (double spaced), should be submitted to Dorothy E. Voss, Editor in Chief, *Physical Therapy Review*, by Apr. 1, 1960. The *Review* Editorial Board will select papers to be read by members and has the prerogative of publishing those papers selected. Members will be notified of the Board's decision not later than April 25.

National Society for Crippled Children and Adults
2023 W. Ogden Ave.
Chicago 12, Ill.

Public Health Section

The annual meeting of the Public Health Section will be held in Pittsburgh, on Sunday, June 26, 1960, from 9:00 A.M. to 5:00 P.M. All members of the American Physical Therapy Association who are interested in physical therapy in public health settings are invited to attend.

The program is not as yet in its final form, but it is planned that the morning session will be devoted to a discussion of the role of the physical therapist in public health with Dr. Jack Sabloff of the Division of Maternal and Child Health in the Pennsylvania Department of Health as one of the speakers. There will also be discussion of the use of public health facilities for clinical practice for physical therapy students. It is possible that the afternoon session may be devoted to discussion of physical therapy in schools for the handicapped, but specific plans for this are not definite at this time.

Following the afternoon session there will be a short business meeting for members of the Public Health Section. Any member of the American Physical Therapy Association holding a position concerned with physical therapy in a public health setting is eligible for membership in this Section.

Application for membership should be sent to the Treasurer:

Miss Lois Mitchell
1664 Monroe Street
Madison 5, Wisconsin

The annual dues of $1.00 should accompany the application.

Section on Education

The annual meeting of the Section on Education will be held on Sunday, June 26, 1960 at the Penn-Sheraton Hotel in Pittsburgh. The general subjects to be discussed at this year's all-day meeting are graduate education and student counseling. A noon luncheon is planned preceding the business meeting.

Membership in the Section on Education is open to members of the American Physical Therapy Association who are associated with educational programs. Thus, membership is open to supervisors or staff members of clinical training facilities, faculties of approved schools, consultants to agencies concerned with public or professional education relating to physical therapy, and those who are affiliated with facilities giving short term, in-service, or postgraduate courses. Applications for membership may be obtained by writing:

Mildred Heap, Treasurer
Section on Education
University of Buffalo
2183 Main Street
Buffalo 14, New York

Section dues are $2.00 a year, payable April 1 of each year. Membership renewals will be sent to current members before that date.

Self Employed Section

The Self Employed Section will hold its Annual Meeting at the Hotel Penn-Sheraton in Pittsburgh, on June 26, 1960.

During the morning session original papers by members will be presented. These will outline the development and management of services by self-employed physical therapists.

The afternoon session will include a business meeting and a film presentation describing a physical therapy service at the core of a medical community.

All members in good standing of the Association are welcome to attend the entire program.

All applications and inquiries regarding the Section should be directed to:

Mr. Joseph Savan, Corresponding Secretary
462 North Taylor
St. Louis 8, Missouri

Barbershop Quartet Competition

Hi P.T.'s young and gay—
Ope your mouths and gently bray
Lift your spirits and don't be thrifty;
Come to Pittsburgh in 1960.

Sing—sing—sing

For years great talents have gone unheard behind closed doors when, at every conference our members huddle around a cauldron of brew and enjoy hours of singing. Here is your golden opportunity to burst forth and share with all these good times. A Barbershop Quartet competition is planned for the members of the APTA during the Sunday evening Opening Reception of the 1960 Conference. Get at least one quartet lined up in your chapter or district—Eastern Pennsylvania District has already challenged Western. We need lots of competition!

Warm up your vocal cords—get squared away with your quartet and let Pa Pitt hear you sing in the Golden Triangle.

Pittsburgh — Her Industries

Pittsburgh has been called many names by many people and the names, both flattering and unflattering, have been given because of the city's industries or of the workers these have attracted. When Charles Dickens said Pittsburgh was like "hell with the lid lifted off," optimists took his remarks as referring to the inferno created by the furnaces of the steel industry. Others think he described Pittsburgh as the first real boom town in the United States. There is no denying that the city and industry have grown hand in hand.

The land rush which settled western Pennsylvania brought farmers from the Virginia colony first and then belatedly from Philadelphia and other eastern points. Even in early times the Allegheny Mountains presented a formidable barrier for east-west communication. Farming was the first industry of the newly settled area. Since shipping of produce was impossible, the worthy pioneers transformed their crops into whiskey. In the early years this was the only money product of Pittsburgh and it led to the bloodshed of the Whiskey Rebellion, which put the city in the national headlines for the first time.

As the westward movement gained impetus, practically all of the pioneers used Pittsburgh, the last point of civilization, as a stopping off place. Industries developed which could outfit the travelers for their difficult journey. Because the rivers offered easy access to the west, boat building was the first major industry. Barges were built for the one-way trip and were constructed so that settlers could use the material to build their new homes. One seldom thinks of our city in relation to ship building, but during World War II most of the L.S.T.'s used for landing operations, as well as some destroyers, were built around the clock at Pittsburgh plants and sent down river to New Orleans. Ships contribute much to Pittsburgh and make her the largest inland river port in the United States with a tonnage greater than that carried by the Panama Canal.

Other industries related to outfitting the westward travelers soon developed. There was manufacturing of rope, textiles, and glass. Glass making flourished, since glass was a precious commodity which represented civilization to many and it could be transported across the mountains only with great difficulty. This was our first industry to assume nationwide importance. From its infant beginning glass production has gone on to be one of the principal industries of the area with Pittsburgh Plate Glass the largest producer in the world.

Even before 1800 there were iron furnaces and, due to the happy combination of geography and natural resources, Pittsburgh became, and still is, the "Steel Capital of the World." Only eight years after General Forbes had captured Fort Duquesne, coal was being mined on Coal Hill which is now Mt. Washington. Historically, coal has dictated the location of great industrial centers, and the coal deposits found near Pittsburgh have been the richest in the United States. Iron ore was found in 1780 on the western slopes of the Alleghenies and could be shipped easily and inexpensively on the rivers. So the mammoth steel industry, responsible for much of Pittsburgh's progress but also responsible for many of her problems, grew. Despite an early beginning, not until the inauguration of the Bessemer process in 1875 did the steel industry move to the front in Pittsburgh. Estimates vary, but all agree, that our city produces one fourth to one fifth of all the steel produced in the United States.

Before the first oil well was drilled at Titusville, Pennsylvania, in 1859, there was a thriving oil industry in Pittsburgh. In fact, the first refinery was built five years earlier to produce oil for medicinal purposes. Gradually Pennsylvania has been replaced as the oil center of the country, but Pittsburghers have remained active in the oil fields and have brought in such famous wells as Spindletop in Texas. Gulf Oil, the largest independent producer in the United States, is located in our city.

Although he was not a native by birth, Pittsburgh claims George Westinghouse, who was attracted by the reputation that the city had for being able to make things more easily, more rapidly, and better than anywhere else. He was a most versatile inventor and can be credited with transforming electricity from a scientific novelty into an immense source of power. Although introduction of air brakes was his main purpose in coming to town, he introduced three major industries to the city and gave her world domination of air brakes and signalling devices. The corporation that bears his name has never stopped its pioneering efforts and more recently has been responsible for the first industrial atom

smasher; the engine for the Nautilus, the first nuclear powered submarine; and the first commercial atomic power plant at Shippingport, Pennsylvania.

Another industry that has spread the name of Pittsburgh throughout the world is the H. J. Heinz Company. Heinz did not invent the process of preserving but his company, founded in 1869 for pickling, introduced new and better methods and made people willing to use the pickles and preserved foods. Today it is hardly possible to go anywhere in the world and not see the familiar bottle of Ketchup and the sign of 57 Varieties. All this came from a man who started his career grating horseradish and selling it to local housewives.

Before the turn of the century another industry was introduced which was destined to play a large role in the development of Pittsburgh. Charles Hall came to town and his process of producing aluminum cheaply gained financial support. The Pittsburgh Reduction Company, which later became the Aluminum Company of America, produced the first aluminum products in the United States. For many years this company produced almost all of the aluminum in America and a large part of the world's supply. Although there are now other makers in this field, ALCOA is still the nation's largest.

One could go on indefinitely with the "who's who" of Pittsburgh industry for there are over 100 major corporations in the area. In the metropolitan area alone there are more than 2,400 industrial establishments producing 5,650 different products. This is even more startling when one considers that this is the most highly suburbanized area in the country, for the City has never annexed the outlying suburbs that justifiably should be considered part of the city. Pittsburgh is proud of her industrial leadership and has definite plans for maintaining supremacy. The Mellon Institute for Industrial Research was founded in 1913 and has, from its beginning, been a leader in this field. Fanning out in a 30 mile radius from the Institute are 67 industrial research laboratories. These almost certainly insure the future of the city, her industry and her people.

Should you fly to the Conference, look down as you come over Pittsburgh for a panoramic view of the rivers and the multitudinous industries that are the mainspring of the city. If you drive or come by train there is no approach to the city that will not take you past sprawling industrial areas. If you come at night the rosy tint to the sky and the flaming furnaces are a never to be forgotten memory of the place that

Courtesy of the J. & L. Steel Corporation

Sparking the Nation's Economy

furnishes steel and other products found in every home in the United States. In bygone days Pittsburghers were secretly proud of the reputation the city had for being the "smoky city"; for they suspected that if the steel mills were not belching forth smoke and fumes, prosperity would vanish. Now we know that industry can control these by-products of production and give us an unobscured view of the heavens. Our industries are as vital as ever, but less conspicuously so.

This industrial center is, indeed, a fitting place to examine the physical therapist's role in the industrial picture and to chart a course for the future of the profession. Let us hope that the same sort of energy and imagination that transformed "Mellon's Patch" into "Mellon's Miracle" will be contagious to both physical therapy and industry.

Alumni Meetings at Conference

Wednesday, June 29

Duke University Luncheon—Noon
University of Wisconsin Luncheon—Noon

SHORT TERM COURSES FOR GRADUATE PHYSICAL THERAPISTS

Title of Course	*Sponsor of Course*	*For Details Contact*	*Dates of Course*
Cerebral Palsy	The North Carolina Cerebral Palsy Hospital Durham, North Carolina	Dr. Lenox D. Baker Medical Director No. Carolina C. P. Hosp. Durham, North Carolina	Courses arranged according to individual need—duration 3 months
Physical Therapy in the Care of Neuromuscular Disease	Georgia Warm Springs Foundation Warm Springs, Georgia	Robert L. Bennett, M.D. Medical Director Ga. Warm Springs Found. Warm Springs, Georgia	January April October
Technics of Neuromuscular Reeducation	California Rehabilitation Center Vallejo, California	Margaret Knott, Chief P. T. Calif. Rehab. Center Vallejo, Calif.	January 1 April 1 July 1 October 1
Functional Bracing of the Upper Extremities	U. of California and U. S. Office of Vocational Rehabilitation	Prosthetics Education Program Rm. B4-229, Medical Center University of California at Los Angeles 24, California	June 13—17, 1960
Upper Extremities Prosthetics	Postgraduate Medical School & College of Engineering New York University	Prosthetics Ed. Program New York University Postgrad. Medical School 550 First Avenue New York 16, N. Y.	May 31—June 10, 1960
	U. of California and U. S. Office of Vocational Rehabilitation	Prosthetics Education Program Rm. B4-229, Medical Center University of California at Los Angeles 24, California	May 9—13, 1960
Lower Extremity Prosthetics	Postgraduate Medical School & College of Engineering New York University	Prosthetics Ed. Program New York University Postgrad. Medical School 550 First Avenue New York 16, N. Y.	Apr. 18—29, 1960
Above-Knee Prosthetics	Northwestern U. and U. S. Office of Vocational Rehabilitation	Director of Prosthetic Education Northwestern U. Med School 401 E. Ohio St. Chicago 11, Illinois	June 20—24, 1960
Below-Knee Prosthetics	U. of California and U. S. Office of Vocational Rehabilitation	Prosthetics Education Program Rm. B4-229, Medical Center University of California at Los Angeles 24, California	April 4—8, 1960
	Postgraduate Medical School & College of Engineering New York University	Prosthetics Ed. Program New York University Postgrad. Medical School 550 First Avenue New York 16, N. Y.	Apr. 7—8, 1960
	Northwestern U. and U. S. Office of Vocational Rehabilitation	Director of Prosthetic Education Northwestern U. Med School 401 E. Ohio St. Chicago 11, Illinois	May 9—20, 1960
Treatment for the Cerebral Palsied	Children's Rehabilitation Institute for Cerebral Palsy Reisterstown, Maryland	Christopher H. Wiemer Executive Director Children's Rehab. Inst. Reisterstown, Maryland	April 4—June 17, 1960 July 5—Sept. 16, 1960 Oct. 3—Dec. 16, 1960

Title of Course	Sponsor of Course	For Details Contact	Dates of Course
Principles and Practice of Geriatric Rehabilitation	Dept. of Phys. Med. & Rehab. New York Med. College-Metropolitan Hospital Center	Dr. Jerome S. Tobis Professor & Chairman Dept. of Phys. Med. & Rehab. New York Medical College 1 East 105th Street New York 29, N. Y.	April 25—May 6, 1960
P.T. 502-a—Anatomy for Therapists	University of So. California Physical Therapy Department University Park Los Angeles 7	Mrs. Roxie Morris Professor of Physical Therapy	August 1—26, 1960
P.T. 511 Neurophysiology in the Treatment of Neuromuscular Dysfunction	University of So. California Physical Therapy Department University Park Los Angeles 7	Margaret S. Rood Head	July 11—29, 1960
Cystic Fibrosis	Children's Hospital Medical Center 300 Longwood Avenue Boston 15	Shirley M. Cogland Director of Physical Therapy	June 6—10, 1960

Education

What Do You Know About the Advisory Committee-Professional Education?

Do you know who are on the Committee or how they became members? Do you know how often the Committee meets or what it does at meetings? Just in case the answer is "no" to any or all of these questions, we would like to answer them for you.

Thelma Pedersen, Chairman; Beth Phillips, Marjorie Ionta, Dorothy Hoag, and Dorothy Behlow are the committee members. Dorothy Behlow was welcomed as a new member replacing Charlotte Anderson who had resigned. The Board of Directors appoints these people and they meet twice a year. The fall meeting started on Wednesday evening, October 24, in Highland Park, Illinois. Sarah Rogers and Anne Pascasio, consultants in the Department of Professional Education, met with the Committee to discuss problems, projects, and recommendations to the Board of Directors on matters related to education.

Since our Committee meeting followed a three day "Exploratory Session on Graduate Study," it was only natural for us to give further thought to this subject. It was decided that a listing of graduate programs was needed. This information, if available, would serve to provide resource material and perhaps to stimulate interest in graduate education. It would be impossible to list everything of interest in the many colleges and universities throughout the country, so the list will include only those graduate programs available in the institutions that have an approved (undergraduate) course in physical therapy. We thought that this information could serve as a start and that individual contacts could be made to the college or university of choice.

From graduate programs we went back to undergraduate education for physical therapists. For some time it has been thought or suggested that information accompanying the list of approved schools printed monthly in the *Review* might be revised or extended to include more data. This was discussed at length and finally it was decided to keep it essentially the same, as this listing serves primarily to inform the membership and the public as to the location of available physical therapy programs. Our single recommendation was that a revision of the preliminary paragraph be made advising prospective students to plan their programs of education to include a degree upon completion of the course or before entering the certificate course.

An informal brief will be prepared to satisfy a further need for those giving advice and information to students regarding courses in approved schools. The brief will include: prerequisites, admission and graduation dates, length of course, transfer level for eligibility for the degree, etc. This way we hope everyone will have the pertinent information needed.

One of the interesting and important responsibilities of the members of this Committee has to do with the joint AMA-APTA survey reports of physical therapy curricula. This involves new programs applying for approval as well as existing ones that are resurveyed for continued approval. At the present time the survey team consists of a physician representing the AMA, a physical therapist representing the APTA, together with an additional physician and physical therapist. A great deal of responsibility is placed on these four people and the job of our Committee is to give what help and advice we can to the physical therapists on the team. Considerable data, submitted by the schools, must be reviewed in detail by this Committee with the aim of giving suggestions and recommendations for strengthening programs. One of our current projects is to help improve survey procedures. As a start we are enlisting the cooperation of school directors who have had recent survey visits. Our objectives are to improve the long, detailed application form and to consolidate the pertinent information which a school needs in preparation for the visit.

Many other items were discussed, but it would be impossible to report everything covered in a three day meeting in an article of this length. We explored the areas of recruitment, budget, and scholarships. One of the continuing concerns of the people involved in education and therefore of this Committee is—how can we better inform the general membership of the problems, projects, and policies related to the education of future physical therapists and the continuing education of members of the American Physical Therapy Association. It is felt that the educational activities of the Association involve all departments—Chapter and Membership, Professional Services, and Education. Thus we have recommended to the Board of Directors that the three advisory committees meet in combined session for one day, in addition to their regular meeting, for the purpose of coordinating long range educational objectives and activities.

The two and a half days and three evenings were well filled. We feel we did accomplish a great deal and each of us took home more work to do before the next meeting. If you have something you want us to do, won't you please contact us?

Neuromuscular Facilitation Technics

The Boston University Sargent College, Department of Physical Therapy announces an Introductory Course in Neuromuscular Facilitation Technics to be given under the direction of Margaret Knott, Physical Therapy Director, California Rehabilitation Center, from June 13 to June 24, 1960.

The course will include instruction in the theory and practice of technics, and an analysis of muscle function in patterns of facilitation. Opportunity will be given for practice under supervision and observation of treatment procedures. Tuition for the course is $90.00 which may be taken for three semester hours credit. Rooms will be available in a Boston University Dormitory for a minimum of $15.00 a week.

The closing registration date will be June 1, 1960. Registration will be limited to 30 qualified physical therapists who are members of the American Physical Therapy Association, or physical therapists trained outside the United States who are eligible to fulfill requirements for membership in the APTA. Students will be selected as applications are received, but the right to select students on a geographical basis is reserved.

Those interested should apply to Professor Adelaide L. McGarrett, Physical Therapy Director, Boston University Sargent College, University Road, Boston 15, Massachusetts. Please indicate whether a room is desired.

Index to Current Literature

(continued from page 180)

RESEARCH

Research and Clinical Medicine. K. W. Donald, Lancet, Lond., 2: 801-806, Nov. 14, 1959

ULTRASOUND

Ultrasonic Effects as Demonstrated in Live Pigs with Surgical Metallic Implants. J. F. Lehmann, G. D. Brunner, A. J. Martinis and J. A. McMillan, Arch. Phys. M., 40: 483-488, November 1959

MISCELLANEOUS

Transportation of the Injured. Oscar P. Hampton, Jr., Am. J. Surg., 98: 534-538, October 1959

New Stanford Medical Center

The new Stanford Medical Center was the meeting place of the Northern California Chapter in January. Approximately 150 members were conducted on tours by students in the physical therapy school. They visited the school, the service department, the medical school, and 445-bed joint Stanford and Palo Alto hospitals.

Lunch was served at noon, followed by a program based on activities in five research fields. Demonstrations were given in electromyography and dynamometer testing. A project on motor behavior of decerebrate cats was illustrated by slides. The speech pathology and dermatology departments, adjacent to physical therapy, cooperated by demonstrating equipment used in their research programs.

The day proved to be a delightful introduction to the new medical teaching facilities on the university campus.

Fellowships for Physical Therapy Teaching

The National Foundation's program of fellowships *for physical therapy teaching* has been expanded so that it offers opportunities for graduate study to:

1. Physical therapists who are now serving as clinical instructors (supervisors) in facilities providing part of the required clinical experience (practice) to physical therapy students; *or* to physical therapists who are now teaching in approved curricula;
2. Physical therapists who have serious intentions of accepting such positions—clinical instructor (supervisor) or teacher—in approved curricula.

For a brochure giving full information of the current program, write to:

Department of Professional Education
The National Foundation
800 Second Avenue, New York 17, New York

Student Column

University of Connecticut

The students of the Connecticut Chapter Student Branch have had a busy schedule since school opened in September for the 1959-1960 academic year.

Oct. 1—The semester began with the annual University of Connecticut activities' fair. The Senior physical therapy students demonstrated prostheses, crutches, and braces in gait training.

Oct. 2—Dr. John C. Allen, Dean of the School, lectured on the broad field of physical therapy and its status in the professional world.

Oct. 4—Members of the faculty held an afternoon tea for the Junior and Senior students. This was a wonderful opportunity

for students to meet their instructors in a social atmosphere as well as an academic one.

Oct. 16—We were fortunate to have Dr. Lillian Gilbreth speak to us on the "Psychology of the Handicapped." This was interesting because of her many personal experiences in the field.

Nov. 5—Miss Griffin, Past President of the World Confederation of Physical Therapy, was a visitor to our campus. It was inspiring to hear her speak of her work with the World Confederation for Physical Therapy.

Nov. 11—The Student Branch had its first APTA meeting of the semester. The first amendment to the constitution was added; it stated that the Student Branch advisor be a member of the Connecticut Chapter. The program included demonstrations for the underclassmen by the Junior and Senior students.

Officers are:

President—Gail Peters
Vice President—Gail Bradley
Secretary—Virginia Levesque
Treasurer—James McQuade

JUDY A. SALIBA
University of Connecticut

Humor and Hydrotherapy

The cartoon on page 209 of this issue of the *Review* is the work of Mary F. Moore, an assistant in the Physical Therapy Department of Wesly Hospital, Wichita, Kansas, which is under the supervision of Fae Hilliard, Association member.

Miss Moore wrote that she "loved every hard minute" of her work in the hydrotherapy room. Some of her experiences have been the inspiration for a series of cartoons.

We admire Miss Moore's sense of humor and look forward to publishing other of her drawings.

Former Member Honored

Dr. Jacquelin Perry, member of the staff at Rancho Los Amigos, was recently acclaimed one of the ten "Women of the Year" for 1959 by the *Los Angeles Times*. Dr. Perry was formerly a physical therapist, having received her training at Walter Reed General Hospital. Five years in the Army made her eligible for the GI Bill which in turn afforded her the opportunity of attending medical school. She received the medical degree at the University of California, San Francisco, and is now the only board-accredited practicing woman orthopedic surgeon in California. Dr. Perry was an active member of the Association from 1941 until 1946 when she began her medical education.

List of Advertisers

Battle Creek Equipment Company 181
Burdick Corporation ..... inside back cover
Chattanooga Pharmacal Co., Inc. 174
Elgin Exercise Appliance Co. 182
Georgia Warm Springs Foundation 176
Geriatric Pharmaceutical Corporation 181
S. R. Gittens 176
Hamilton General Hospitals 232
Ted Hoyer & Company, Inc. 170
LaBerne Manufacturing Company 174
Leverage Hand Brake Company 176
Medco Electronics Company, Inc. 171
J. A. Preston Corporation ..... inside front cover page 169, page 230 and back cover
Rehabilitation Products (American Hospital Supply Corp.) 175
Ritter Company, Inc. 177
Sierra Engineering Co. 179
Teca Corporation 182
Louis A. Weiss Memorial Hospital 173

Coming Meetings

March 21–23	New England Hospital Assembly, Statler-Hilton Hotel, Boston
March 21–24	American Academy of General Practice, Convention Hall, Philadelphia
April 4– 9	American College of Physicians, Mark Hopkins and Fairmont Hotels, San Francisco
April 7– 9	American Association of Railway Surgeons, Drake Hotel, Chicago
April 11–15	American Physiological Society, Chicago
April 11–16	International Anatomical Congress, New York City

Schools Offering Courses in Physical Therapy

APPROVED BY THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS OF THE AMERICAN MEDICAL ASSOCIATION

Schools offering the four year program leading to a baccalaureate degree accept high school graduates and transfer students. Schools offering the 12 to 16 months' program leading to a certificate accept students who have completed all or most of their undergraduate work providing they meet certain course requirements. Recipients of a degree and/or certificate have equal professional status. For specific information regarding each school's entrance requirements, curriculum, tuition and other fees, write to the physical therapy director indicated below. All students should investigate course requirements *early*.

	Degree	*Certificate*
CALIFORNIA		
Mary J. Dodge School of Physical Therapy Childrens Hospital Society 4614 Sunset Boulevard Los Angeles 27	‡	†
Ronald A. Hershey School of Physical Therapy College of Medical Evangelists Loma Linda	†	†
Lucille Daniels Division of Physical Therapy School of Medicine Stanford University Stanford (Palo Alto)	†	†
Margery L. Wagner Curriculum in Physical Therapy University of California The Medical Center San Francisco 22	†	†
Margaret S. Rood Department of Physical Therapy University of Southern California Los Angeles 7	†	†
COLORADO		
Dorothy Hoag Curriculum in Physical Therapy University of Colorado Medical School Denver 20	†	†
CONNECTICUT		
Frances M. Tappan School of Physical Therapy U 101 University of Connecticut Storrs	†	
ILLINOIS		
Elizabeth C. Wood Course in Physical Therapy Northwestern University Medical School 303 East Chicago Avenue Chicago 11	†	†
INDIANA		
Frances C. Ekstam Physical Therapy Program School of Medicine Indiana University Medical Center Indianapolis 7	†	
IOWA		
Olive C. Farr Physical Therapy State University of Iowa Hospitals Iowa City		†
KANSAS		
Ruth G. Monteith Section of Physical Therapy Education University of Kansas Medical Center Kansas City 12	†	†
MARYLAND		
Gladys E. Wadsworth, Ph.D. Department of Physical Therapy School of Medicine University of Maryland Baltimore 1	†	
MASSACHUSETTS		
Adelaide L. McGarrett Physical Therapy Department Boston University Sargent College University Road Boston 15	†	†
Constance K. Greene Department of Physical Therapy *Bouvé-Boston School, Tufts University Medford 55	†	
Shirley M. Cogland *Program in Physical Therapy Simmons College The Fenway Boston 15	†	†
MICHIGAN		
Virginia Wilson Curriculum in Physical Therapy The University of Michigan University Hospital Ann Arbor	†	†
MINNESOTA		
Dale V. Shaffer School of Physical Therapy Mayo Clinic Rochester		†
Wilbur L. Moen Course in Physical Therapy University of Minnesota 860 Mayo Memorial Building Minneapolis 14	†	

* Accepts women students only.

‡ Baccalaureate degree available from an affiliating college or university.

	Degree	Certificate
MISSOURI		
Sr. M. Imelda, S.S.M. Department of Physical Therapy St. Louis University 1325 South Grand Boulevard St. Louis 4	†	
Beatrice F. Schulz Department of Physical Therapy Washington University School of Medicine 660 So. Kingshighway St. Louis 10	†	
NEW YORK		
Dorothy L. McLaughlin Russell Sage College-Albany Medical College Division of Physical Therapy Albany 8	†	†
Mary E. Callahan Courses for Physical Therapists Columbia University College of Physicians & Surgeons 630 West 168th Street New York 32	†	†
Elizabeth C. Addoms Physical Therapy Curriculum School of Education, New York University Washington Square East New York 3	†	†
Mildred F. Heap Program in Physical Therapy University of Buffalo 3435 Main Street Buffalo 14	†	†
NORTH CAROLINA		
Helen Kaiser Division of Physical Therapy Box 3403, Duke University Medical Center Durham		†
Margaret L. Moore Section of Physical Therapy School of Medicine University of North Carolina Chapel Hill	†	
OHIO		
Robert D. Kruse, D.P.E. Course in Physical Therapy Frank E. Bunts Educational Institute 2020 East 93rd Street Cleveland 6	‡	†
Gladys G. Woods Curriculum of Physical Therapy Ohio State University University Hospital Columbus	†	†

	Degree	Certificate
OKLAHOMA		
Thelma Pedersen School of Physical Therapy University of Oklahoma, Medical Center Oklahoma City 4	†	†
PENNSYLVANIA		
Dorothy E. Baethke Division of Physical Therapy University of Pennsylvania 3901 Pine Street Philadelphia 4	†	†
Kathryn Kelley Division of Physical Therapy D. T. Watson School of Physiatrics Leetsdale	‡	†
PUERTO RICO		
(All classes given in Spanish) Lutgarda V. Piñeiro School of Physical & Occupational Therapy Candelaria & Mandry Streets Stop 22, Santurce	†	†
TEXAS		
Doris E. Porter Grady Vaughn School of Physical Therapy Baylor University Medical Center Dallas 10	†	†
Cecelia J. Lee School of Physical Therapy Hermann Hospital Houston 25	‡	†
Ruby Decker School of Physical Therapy The University of Texas Medical Branch Galveston	†	†
VIRGINIA		
Susanne Hirt School of Physical Therapy Medical College of Virginia Richmond 19	†	
WISCONSIN		
Beth J. Phillips Curriculum in Physical Therapy Marquette University School of Medicine 561 North 15th Street Milwaukee 3	†	
Margaret Kohli Course in Physical Therapy University of Wisconsin Madison 6	†	
U. S. ARMY MEDICAL SERVICE		
*Physical Therapy Course Army Medical Service School Brooke Army Medical Center Fort Sam Houston, Texas Write to: The Surgeon General Department of the Army Washington 25, D. C. Att.: Personnel Division		†

* Accepts women students only.

‡ Baccalaureate degree available from an affiliating college or university.

Please direct all inquiries regarding tuition, entrance requirements and other specific information to the school and *not* to the American Physical Therapy Association.

Abstracts

One Hundred Years of Gray's Anatomy

Editorial, N. ENGLAND J. M., 261: 1249-1250, Dec. 10, 1959

The first American edition of *Anatomy, Descriptive and Surgical* by Henry Gray was published in Philadelphia in 1859. This year, the firm of Lea & Febiger is issuing a centennial edition, the twenty-seventh revision, now called *Anatomy of the Human Body*. More than half a million copies of this text have been supplied during a century of publication in America. Such popularity is based on the fundamental soundness of Gray's work.

Gray, probably born in London in 1827, entered St. George's Hospital Medical School as a "perpetual student" in 1845. While still a student in 1848, he won a prize from the Royal College of Surgeons for an essay on the nerves of the human eye, based on his own observations from dissection. This personal research was later expanded into a paper "On the Development of the Retina and Optic Nerve, and of the Membranous Labyrinth and Auditory Nerve," which was read by William Bowman, F.R.S. at a meeting of the Royal Society on Jan. 31, 1850. Bowman quickly recognized the value of Gray's work at a time when Gray was serving as house surgeon at St. George's Hospital and read a second paper on "The Development of the Ductless Glands in the Chick" to the Royal Society. These two papers resulted in Gray becoming a fellow of the Royal Society on June 3, 1852, at the age of 25.

Gray became demonstrator, curator of the museum, and lecturer on anatomy at St. George's Hospital after finishing his year as house surgeon. In 1852, a grant from the Royal Society to study the spleen resulted in publication in 1854 of a comprehensive book, *On the Structure and Use of the Spleen*. During these years Gray worked on the *Anatomy* and published other papers on pathology.

The *Anatomy*, first published in London in 1858, was almost immediately accepted as a standard work. Gray then turned to surgery and by 1861 was surgeon to St. George's and St. James' dispensaries and a candidate for the post of assistant surgeon at St. George's Hospital. Before being confirmed to this post, Gray contracted a virulent form of smallpox from his small nephew for whom he was caring and died. His loss was great. His possible contribution to surgery cannot be estimated but his name as an anatomist has endured over one hundred years as his textbook goes into its second century with all the vigor of youth.

Hypertonus and Physical Therapy

J. H. Crosland (Physical Medicine Department, Central Middlesex Hospital, London), CEREBRAL PALSY BULL., 6:34-36, Summer 1959

This paper is limited to the effects of physical therapy on hypertonus of muscle and thus on the function of a limb or other body part. The aims of physical therapy for hypertonus, as for other conditions, are the improvement of function to the greatest possible degree and the prevention of deformity. Physical therapy cannot cure hypertonus, but it can ameliorate its degree. It can modify the disabling effects produced in the involved body part.

The degree of hypertonus in cerebral palsy varies from a little stiffness of the calf muscles (causing minimal difficulty in dorsiflexion of the foot) to a severe condition where whole muscle groups are wasted (i.e., have never matured). It is in this latter group that improvement from physical therapy depends on the severity of the initial pathological process.

Manual stretching, immobilizing plaster casts and night splints are the common methods for stretching hypertonic muscles. They are not as efficient as the use of walking calipers. In all but the worst cases the child can learn to walk in his calipers, and thus stretch his own muscles. It is pointed out that walking calipers must have knee hinges which can be locked and unlocked at will. If a rigid brace is used, the gluteal and lower back muscles become stretched when the child sits in a chair. Although the hypertonus does not disappear over the years of caliper stretching, its degree is modified.

The use of heat rather than cold is beneficial in reducing hypertonus. In the most skillful and experienced hands manual kneading is said to increase the blood flow, thus helping the physiological processes concerned in muscle growth. The use of posture and righting reflexes is of little or questionable benefit on hypertonus.

The classic hypertonicity of the plantar flexors of the foot in spastic cerebral palsy results in deformity of the foot and weakness of the antagonistic muscles. This condition may be offset by means of calipers and appropriate exercise to the foot extensors. Splinting for hypertonus of the upper limb is impractical. Therefore the physical therapist must resort to manual stretching of the affected muscles with exercises to the unaffected or less affected muscle groups. "Replacement therapy" or substituting the function of a more powerful muscle for a weakened muscle is another physical therapy aim. Spastic paresis or weakness of hypertonic muscles may be improved in power through exercises, but no amount of physical therapy will abolish this weakness.

In the summary the author makes a distinction between paresis of the hypertonic muscles, the weakness of normal muscles, and the increased weakness of hypertonic muscles. He emphasizes the use of stretching for increased tone, and its harmful effect if used on muscles of decreased tone. Power may be increased in hypertonic muscles when the hypertonicity has been modified by physical therapy.

Chemosurgery for Parkinsonism

C. Kent Olson (Abbott Hospital, Minneapolis, Minnesota, AM. J. NURS., 59: 1411—1413, October 1959

Although paralysis agitans has been recognized since Biblical times no effective treatment had been found to alleviate the tremor and rigidity which incapacitates the patient with parkinsonism. Recently, "closed" technics have been developed for the destruction of focal cerebral areas.

Two methods are used, electrocautery or a chemical. This article describes the chemical approach. A small hole is made in the skull. A rubber balloon attached to a cannula is inserted and inflated causing pressure on the cells that are to be destroyed. This procedure makes possible accurate location before tissue destruction is begun. Absolute alcohol is usually the chemical used. The areas most frequently considered for treatment are the globus pallidus and the ventrolateral muscles of the thalamus.

Preoperative, operative, and postoperative care is described in some detail. Surgery is done under local anesthesia which allows for accurate

location of areas to be destroyed. Postoperatively patients require much help and training as they have become so accustomed to the limitations of their disease that they are unaware that more activity is now possible.

Because this procedure does not effect a complete cure, care must be used in choosing the patient to be treated. Those totally incapacitated for long periods can benefit and eventually become physically independent, though the rehabilitation period may be longer. Best results are obtained in younger and stronger patients and in those with predominantly unilateral involvements. The risk to life is about 2 per cent and of serious sequelae, 2 per cent—3 per cent.

Disability Associated with ECHO Virus Infections

P. F. Wehrle et al. (Department of Pediatrics, State University of New York Upstate Medical Center, Syracuse, New York), N. YORK STATE J. M., 59:3941-3945, Nov. 1, 1959

Until about 10 years ago a diagnosis of poliomyelitis, based on clinical findings and confirmed by laboratory data, was made without misgivings by the clinician.

The situation has changed dramatically in the past few years with the discovery of Coxsackie viruses and several ECHO (enteric cytopathogenic human orphan) viruses, associated with nonparalytic and mild paralytic disease. Rapid isolation and identification of these viruses have compounded the physican's diagnostic possibilities in the poliomyelitis and aseptic meningitis syndromes.

To further delineate the status of the ECHO viruses, patients with ECHO-6 and ECHO-9 infections were studied. Fifty-seven patients with tentative diagnoses of acute poliomyelitis and aseptic or viral meningitis were followed and the ECHO virus of all patients was isolated. Each patient was given a complete evaluation of muscle function by Mildred E. Judge and Margaret C. Parizeau, physical therapists, who are two of the authors of the article. Subsequent evaluations were made during the duration of the study, 1954-1958.

The findings of this study show a definite, although invariably relatively mild, muscle weakness associated with ECHO virus infection and the persistence of this weakness for long periods of time.

This study indicates that careful evaluation of each patient is essential in the proper management of aseptic meningitis syndrome, regardless of the etiology of the disease, to assure optimal functional recovery.

The Surgical Treatment of Painful Spasm

Geoffrey Platt (Aylesbury, England), J. INTERNAT. COLL. SURGEONS, 32: 545-551, November 1959

In many cases of disease of the spinal cord, painful spasm is a prominent and distressing feature. It interferes with sleep, prevents sitting in a chair, and often the patient is afraid to move as this may precipitate further painful contractions. In the management of disease of the spinal cord it is most important that a position of deformity should not be adopted for more than a brief period during the day. Prone lying must be encouraged to alleviate hip flexion and knee flexion contractures.

Once contractures have formed, it is necessary to apply some external force to counteract the deforming effect of the muscles. Prolonged gentle pressure using spring traction or turnbuckle plaster is not usually suitable because the skin will not tolerate the forces required. However the skin will tolerate great pressure for limited periods. This method has been used to pull out contractures and has met with some degree of success; however, it is time consuming.

The author discusses some surgical procedures used in the past to correct the flexion contractures and the difficulties encountered. A combination of operations including neurectomy, tenotomy, and tendon transplant have recently achieved striking success. To relieve adduction and flexion of the hips, an obturator neurectomy combined with release of the iliopsoas is recommended. Knee flexion contractures are released by transplanting the insertions of the biceps femoris, the semitendinosus, semimembranosus and gracilis to the femoral condyles. This may be combined with sectioning the branches of the posterior tibial nerve innervating the gastrocnemius muscle. Details of the surgical procedures are presented and two case histories reported. The author states that early postoperative results are gratifying. Relief of both pain and spasm are most noticeable, and there is every indication that this type of operation can keep these patients much more comfortable and active than would otherwise be possible.

The Treatment of Recent Bell's Palsy on a Rational Etiological Basis

F. B. Korkis (152 Harley St., London, W.1., England), A.M.A. ARCH. OTOLAR. 70:562-569, November 1959

The author presents the results of an experimental clinical investigation to determine the treatment most likely to give the greatest degree of recovery in the shortest possible time and to test the validity of the ischemic theory of origin of Bell's Palsy.

The term "Bell's Palsy" is confined to "idiopathic" peripheral facial paralysis. It is well known that 80 per cent of all patients regain full function without specific intervention.

According to the ischemic theory propounded by Kettel in 1947, Bell's palsy results from interference with the blood supply to the facial nerve. This takes place through the minute vasa nervorum which reach the seventh nerve in the unyielding bony fallopian canal in the temporal bone near the stylomastoid foramen. Ischemia of the nerve leads to ischemic paralysis. The actual cause of the vascular dysfunction is unknown, but it results in either vascular spasm, intraluminal thrombosis, or a combination of primary spasm and secondary thrombosis.

According to the author this theory offers the best explanation of the well known clinical features and course of Bell's palsy. It explains the sudden onset, the lack of systemic disturbance, the variability in the degree of severity of paralysis, the differences in the time and degree of exposure to draft, the progression which is sometimes seen from an incomplete to a complete paralysis (secondary compression), and the possibility of recurrence. Mild cases are compatible with minor degrees of temporary spasm and severe ones with longlasting spasm, or thrombosis.

The results of treatment obtained in the reported investigation reveal that if spasm is relieved soon after the onset of the paralysis, recovery may begin almost at once in the vasospastic group of patients. In the case of a long-continued vaso-

spasm or of primary or secondary thrombosis quick recovery is not seen; then vasodilator therapy may fail, and it is necessary to relieve the compression either by medical or by surgical means.

A rational treatment plan aims at the rapid relief of angiospasm, the prevention of secondary thrombosis, and the reduction of swelling.

Refractory and Irresponsive Periods of Muscle in Progressive Muscular Dystrophy and Paresis Due to Lower Motor Neuron Involvement

Thomas W. Farmer, Fritz Buchthal and Poul Rosenfalck (Institute of Neurophysiology, University of Copenhagen, Denmark) NEUROLOGY, 9:747-756, November 1959

The course of recovery was determined after the passage of a propagated action potential in directly stimulated small fiber bundles in muscles of patients with progressive muscular dystrophy and with paresis due to lower motor neuron involvement.

In dystrophic muscle the absolute refractory period averaged 2.5 msec. as compared with 3.6 in normal muscle. This decrease was due to an over-all reduction in refractory period rather than to a selective loss of the fibers with long refractory periods found in normal muscle. The reduction in refractory period was found even in muscles with only a minimal force reduction or none at all and had the same degree in pseudohypertrophic and facioscapulohumeral or limb-girdle types of the disease. It can be explained by the decrease in intracellular potassium and the resulting increase in excitability.

The absolute irresponsive periods of dystrophic muscle did not deviate from those of normal muscle and exceeded the absolute refractory period by, on the average, 1 msec. as compared with 0.1 msec. in normal muscle.

In paresis due to peripheral nerve injury, the absolute refractory period was 50 per cent larger than in normal muscle. This can be explained by the changes in membrane properties caused by denervation and evidenced by the slower rate of repolarization and the reduced conduction velocity. Difference between refractory and irresponsive periods was slight.

In paresis secondary to anterior horn cell involvement, the absolute refractory and irresponsive periods were within the limits of normal muscle. This was probably due to the relatively larger number of intact muscle fibers in these muscles as compared with paresis in peripheral nerve injury.

The Reticular Formation Revisited

I. Calma (Department of Physiology, University of Liverpool), CEREBRAL PALSY BULL., 6:1-9, Summer 1959

In recent years the term RF (reticular formation of the central nervous system) has come to mean different things to the anatomist, the histologist, and the physiologist. Investigations suggest that three main physiological systems may be distinguished in the RF, the region long noted for the vital centers of cardiac, respiratory, vasomotor, and vomiting control.

Considerable overlapping and interplay of impulses from the diffuse endings of the cerebellofugal fibers and other centers in the RF suggest the first system, the reticular cerebellar system.

The second system, the reticular descending system, may be said to contain cortical relay centers and feed-back centers. Transmission of impulses to the lumbar and sacral segments appear to be relayed indirectly from the reticulo-spinal fibers descending in the ventrolateral funiculus.

This same funiculus also contains direct ascending fibers (spinoreticular fibers) from all spinal levels. Further collateral fibers from the main sensory tracts also end in the RF. These and other ascending fibers are considered the third or reticular ascending system.

These systems are not self contained or independent of each other. They may not be considered as isolated units, but rather as an integrating system. Herein lies the puzzle and the challenge of the RF mechanisms.

For physiological purposes the RF may be divided into two parts, each responsible for an opposite effect on skeletal muscles. A small well defined medial area in the bulbar RF has an inhibitory effect on spinal motoneurones; a larger, diffuse area extending from the caudal diencephalon to the medulla in the lateral RF has a potentiating effect on spinal motoneurones.

Electrical stimulation of the areas of inhibitory function produces a remarkable effect at all spinal levels. A number of spinal reflexes are inhibited bilaterally and existing muscle tone disappears. Suitable lesions show that this inhibition must be due to stimulation of the medial inhibitory RF neurones and that the inhibitory process must be at spinal level.

The potentiating effect of the RF on spinal motoneurones cannot be as clearly demonstrated by experimental lesions because of the wide area involved and the apparent absence of correspondence to any particular anatomical or nuclear subdivision. It has been shown that the lesions of the facilitatory RF decrease the rigidity produced experimentally in animals by ablation of the motor area and of the anterior lobe of the cerebellum.

Reference is made to the great advance in the knowledge of the mechanism of action of the RF and the cerebellum by Granit and his coworkers. They have shown that supraspinal structures, like the RF, are linked to the spinal gamma motoneurones by fast descending fibers. In this way the supraspinal structures integrate motor and sensory performance in a fascinating way, achieving movement through the gamma loop and at the same time picking up an adequate volume of sensory information from the contracting muscles.

The influence of the RF on the cerebral cortex was discovered by Moruzzi and Magoun. Their interpretation is based on the early observations by Berger. According to Berger, the EEG of man is characterized by slow high-voltage rhythms and the beating together of large numbers of cortical neurones during rest and sleep, all of which gives way during mental and sensory activity to fast low-voltage waves and asynchronous rhythms. Experiments are described which show that the normal working of the cerebral cortex and possibly alert behavior are dependent on the normal function of subcortical centers.

The author concludes with the question—whether the RF acts as a nonspecific activator of the cortex and an over-all controller of muscle tone, or whether by a continuously variable action it coordinates cortical action and postural and phasic muscular movements in all physiological situations. He looks forward to the useful results of the histological investigations concerning the organization and relations between the various systems represented in the RF.

Whirlpool-Induced Purpura in Anaphylactoid Purpura

Harold H. Hoefle, Jr. and Ralph C. Williams, Jr. (Department of Medicine, U.S. AF Hospital, Maxwell AFB, Montgomery, Alabama), AM. J. M. SCI., 238:610-613 November 1959

A case of anaphylactoid purpura presenting unusual diagnostic features is reported.

This patient developed joint manifestations (tenderness, swelling and heat), petechiae, and purpura. The usual signs of capillary fragility were repeatedly negative, while whirlpool bath immersion (106 degrees F.) easily induced petechiae. The same effect could not be produced by constant hot packs at the same temperature maintained over a like period of time with legs in a dependent position.

These findings suggest that whirlpool bath immerson may be of value in assessing capillary fragility when other tests of capillary integrity are normal.

Incidence and Type of Pathologic Alterations Observed in Muscle in a Routine Autopsy Survey

Carl M. Pearson (Department of Medicine, University of California School of Medicine, Los Angeles), NEUROLOGY, 9:757-766, November 1959

Multiple muscle biopsies were taken at autopsy from 9 predetermined sites in 110 routine autopsies. Careful histologic study of this material disclosed that in 54 cases, or 49 per cent, some type of abnormality was observed in the muscle fibers, or the adjacent structures of one or more muscles. The nonspecific alterations observed included various types of degeneration and regeneration of muscle fibers as well as interstitial or perivascular inflammatory infiltrates. These were found most commonly in one of the connective tissue disorders or in myasthenia gravis, but also were seen in a wide variety of unrelated disease states.

Specific lesions observed in this series included trichina parasites in 5 cases and metastatic tumor nodules in 16 per cent of 38 cases with malignancy.

The interpretation of regeneration of muscle is discussed in some detail. It was pointed out that the observed nonspecific lesions most likely contribute to the general loss of muscular strength and debility in the chronic disease state and that none of them can be relied upon to specifically clarify the clinical diagnosis of the disease under consideration.

Modern Concepts Concerning Etiology and Treatment of Cerebrovascular Accidents

Robert A. Kuhn (All Souls Hospital, Morristown, New Jersey), ANGIOLOGY, 10:342-353, October 1959

Reorientation in thinking about cerebrovascular accidents has led to possibilities of curing and even preventing some types of strokes. Since some of these methods require surgical intervention, a promptly established, precise, focal anatomical diagnosis is necessary. This type of diagnosis cannot be made on purely clinical data. Cerebral angiography offers an accurate way of evaluating and pinpointing the lesion.

In a series of case histories, the author discusses the use of angiograms in diagnosis and successful surgical intervention in the treatment of nonhemorrhagic strokes.

Care of Civilians Rendered Paraplegic by an Injury to the Spinal Cord or Cauda Equina

Donald Munro (362 Adams Street, Milton, Massachusetts), N. ENGLAND J. M., 261:833-838, Oct. 22, 1959

The purpose of this article is to point out the plight of certain patients paralyzed as a result of spinal cord or cauda equina injuries. During and immediately following World War II, there was a great deal of interest in the patient with cord injury. This was especially true in the United States and Canada; however, later there developed a definite apathy toward these patients. This was partly due to the length of time needed for effective treatment. Doctors could treat a greater number of less involved patients in the same length of time.

Case reports describe patients that had been diagnosed improperly and as a result had received poor treatment and prolonged periods of hospitalization. Because of these combined factors patients developed bed sores, genitourinary problems, and an uncooperative attitude—all of which hindered rehabilitation. With a correct and early diagnosis there were fewer deaths, nursing problems were decreased, and rehabilitation was accomplished in a much shorter period of time.

If the medical profession will accept the responsibility for patients with cord injury and at the same time make the community aware of their needs, an effective rehabilitation program for this type of patient is possible.

Depression: Recognition and Management

Charles E. Goshen (8501 Howell Road, Bethesda, Maryland), N. YORK STATE J. M., 59:4392-4393, Dec. 1, 1959

Depression is a constellation of complaints or symptoms having as the main theme a discouraged pessimistic outlook on life. Depression may occur in many psychiatric conditions, or in conjunction with various physical diseases. It is important to recognize and deal with depression because each depressed patient is a potential suicide.

Depression tends to occur in people who have always been worrisome, perfectionistic, meticulous, and sensitive to criticism. It is almost invariably precipitated by some failure or series of failures. Many times the depressed patient will attempt to conceal the nature of his problem by complaining of some trivial or imagined failure in an effort to direct attention away from the one which is really distressing him. A general indication of depression is that the person will have many greatly exaggerated complaints that do not yield to reassurance. Depressions tend to follow a cycle with the patient returning to his usual outlook in a period of a few weeks or few months.

In general, the management of this type of patient consists of counteracting his tendency to become inert and apathetic. This necessitates doing whatever is effective in keeping him active and interested. He will show a great deal of resistance, but the hopeful attitude of those around him who are making the effort to keep him active and interested will have more influence on him than he will admit. The most dangerous role for others to assume is to neglect him, for then he is likely to resort to drastic measures to attract attention. The depressed person should be hos-

pitalized only if the home cannot provide an adequate amount of interest, stimulation, and human attention. As with other types of patients the physician will refer to a psychiatrist those whom he feels he himself cannot adequately treat. In general, the various chemical and electrical measures advocated for the treatment of depression have been only as effective as the skill of the physician administering them. There is no chemical substitute for human interest and enthusiasm.

Brief Maximal Isotonic Exercises in the Treatment of Knee Injuries

Donald Rose (Department of Physical Medicine, University of Kansas Medical Center, Kansas City, Kansas), J. AM. M. Ass., 171:1673-1675, Nov. 21, 1959

Reference is made to the work of Hettinger and Muller who concluded that the greatest increase in strength occurs when a muscle is loaded to a point near its maximum, that one exercise period per day is as effective as multiple periods, and that one 6-second contraction sustained isometrically is as effective as one of a longer period in the induction of strength.

Dr. Rose conducted a study on 47 adults with unilateral injuries to the knee. He used the following technic of loading the quadriceps femoris. After proper positioning of the subject and attachment of the weight load to the foot, the leg was extended from a position of 90 degrees flexion to maximum extension and maintained in maximum extension for 5 seconds. The initial position was then resumed and the weight removed.

The initial weight lifted was the maximum amount as determined by only two or three attempts. This small number of initial attempts was emphasized in order to minimize the cumulative inhibitory influence of painful proprioceptive feedback on the movement pattern. The exercise was performed once daily. On each attempt 1.25 pounds were added to the amount previously lifted. This sequence was repeated until the ceiling of strength was attained.

Nearly all of the subjects increased the strength of the quadriceps femoris by 1.25 pounds at each exercise effort. With one exception all patients became asymptomatic after no more than 10 exercise attempts. The phenomenon of cross education appeared to be of no value clinically.

Abstracters for March

The Editorial Board of the *Physical Therapy Review* is indebted to the following Association members for assistance in the preparation of abstracts in this issue:

Rachel Adams — Miriam Partridge
Ethel Coeling — Corrine Strong
Dorothy Kemske — Geraldine Midgley
Patricia Wakefield — Helen Weber
Virginia Wirtz

Book Reviews . . . . .

Pathology. *By Peter A. Herbut, M.D., Professor of Pathology, Jefferson Medical College and Director of Clinical Laboratories, Jefferson Medical College Hospital, Philadelphia. Ed. 2. Cloth; price $18.50. Pp. 1516; illus. Lea & Febiger, Philadelphia, 1959.*

This second edition of this book is a well balanced, well organized, detailed textbook of pathology.

The pathologic physiology of each organ or system is clearly summarized in each chapter before the details of the pathologic changes in organs or systems are presented. The anatomic changes are also correlated with the altered physiologic function, clinical manifestations, and various laboratory tests. The text is easy to read and the book is well illustrated. References lists are considered adequate.

The book compares very favorably with the existing better textbooks of pathology. It can be used by students, clinicians, and pathologists.

Child Welfare: Principles and Methods. *By Dorothy Zietz, M.S.W., Ph.D., Associate Professor of Social Welfare, Sacramento State College, Sacramento, California. Cloth; price $5.50. Pp. 384. John Wiley & Sons, New York, 1959.*

The subtitle indicates the purpose of this book as principle implies standard of service while method refers to procedures and practices in Child Welfare Service. The book is especially prepared for the college classroom and is apparently intended primarily as a text in a course on child welfare in colleges with schools specializing in social work training.

The author is well qualified to write in this area having taught courses in child welfare most recently at Sacramento State College but previously at Michigan State University, Ohio University, and Bowling Green University. In addition to her academic achievement she has had a variety of social work experiences in both public and private agencies in Michigan and California. She obtained her B.S. degree in social science from the Illinois Institute of Technology, her M.S.W. at Loyola University School of Social Work and a Ph.D. in sociology from the University of Maryland.

The book is divided into five parts. The first three parts provide a historical review of the child welfare movement starting with the origin of such service in the sixteenth century in England and tracing these early influences through the American Colonial Period to point out the effect of this influence on the contemporary approach to the child welfare problem. Parts four and five provide an analysis of special needs encountered by children with physical, mental and social handicaps and describes how these are being met in the contemporary social structure. The three approaches of social work; namely, case work, group work and community organization, are considered in relation to child welfare problems. However, the author does not restrict herself to social work concepts but utilizes an interdisciplinary approach to interpret the role of psychiatry, psychology, education, medicine and law as related to child welfare activity.

The physical therapist will find that part of the book which is devoted to the special needs of children with physical disability problems especially useful in providing a better understanding of the social problems of such children. This section includes an excellent review of the development and history of crippled children services in this country. The book has a free flowing style, and the writing is in an everyday vocabulary that makes it easy to read and comprehend. Consequently, those who are serving children with special problems will find this book just as interesting and useful as the student who is currently being trained in the field of social work itself.

Autogenic Training: *A Psychophysiologic Approach in Psychotherapy.* By Johannes H. Schultz, *M.D., West Berlin, and Wolfgang Luthe, M.D., Montreal. Dr. Schultz is credited with being founder of Autogenic Training. The first edition of his textbook,* Das Autogene Training, *was published in German in 1932. This book is based on the ninth edition of the German textbook published in 1956. Cloth; price $9.50. Pp. 304; illus. Grune & Stratton, New York, 1959.*

The ninth edition of Schultz's *Das Autogene Training*, first published in 1932 in Germany, provided the framework for this English language introduction to Schultz's method of producing and utilizing a "state of amplified relaxation similar to the hypnotic state." Those who have read Jacobson's *Progressive Relaxation* and Read's *Childbirth Without Fear* are acquainted with related, though more limited, approaches.

The book is organized into four unequal parts: method, application, research and theory, and appendix. The physical therapist will be mainly interested in Parts I and III.

Part I contains the most material relevant to physical therapy. The section on reduction of afferent stimuli will interest those using proprioceptive technics in muscle reeducation. The description of training postures provides an excellent rationale for proper methods of setting up thermotherapy patients. The training formulae, passive concentration, and the first two standard exercises (heaviness and warmth in the extremities) will concern those presently using relaxation technics. The standard exercises progress through cardiac regulation, respiration, abdominal warmth, and cooling of the forehead. A series of seven meditative exercises and special exercises are also described.

Part II contains a third of the thin volume's total pages. Each clinical application is discussed in detail. Nonclinical applications are also presented. Autogenic training is applied as both preventative and specific medicine for the gamut of tension-caused ailments. Clinical application is advisedly carried out by "physicians who have learned the technique themselves under the guidance of an experienced colleague."

Physiological research and theory are adequately covered in the 20 concise pages comprising Part III. All items in this part, as in the rest of the book, are documented. A sample research note of interest deals with a study on advanced trainees for whom "assuming the training posture appears to act as a conditioned reflex and provokes a rise in skin temperatures of the extremities."

Part IV consists of a bibliography, an author index, and a subject index. The bibliography lists over 600 references, most of which are from German medical journals. The subject index is thorough.

The book is easy to read even though it is composed almost entirely of translated material. Case summaries and training protocols help in the interpretation of both method and application. The use of insetting and small type for this clinical material aids the scanning reader. Illustrations are few but well chosen.

This technic might assume an important role in the physical therapist's future should its stated advantages be borne out as psychiatrists and physiatrists in this country become introduced to it. The book is highly recommended as a reference handbook on relaxation for physical therapy school or clinic use.

Trauma. *By Harrison L. McLaughlin, M.D., Professor of Clinical Orthopedic Surgery, College of Physicians and Surgeons, Columbia University. Cloth; price $18.00. Pp. 794; illus. W. B. Saunders, Philadelphia, 1959.*

Dr. McLaughlin has enlisted contributions from a large group of surgeons in the preparation of this monograph. All but one of these contributors have been or are members of the Attending Staff of the Columbia-Presbyterian Medical Center and the Faculty of the College of Physicians and Surgeons of Columbia University.

This excellent volume is directed primarily to medical students, residents, and those in general practice who are called upon to treat most civilian accidents. A sincere effort has been made to avoid oversimplification without offering a confusing choice of procedures.

The first section of one hundred pages is devoted to general principles in the treatment of trauma, infection and antibacterial agents, thermal trauma, and vascular injuries. The body of the text is divided into four sections as follows: the upper extremity, the lower extremity, the trunk, the head and special senses. Each chapter opens with an excellent outline of the special anatomy of the area which may influence choice of treatment or predispose to complication in the management of the injury.

Many excellent drawings and reproductions of radiographs are included. These with the orderly presentation of material and a good index should make this a useful text.

Function of the Human Body. *By Arthur C. Guyton, M.D., Professor and Chairman of the Department of Physiology and Biophysics, University of Mississippi School of Medicine. Cloth; price $7.50. Pp. 584; illus. W. B. Saunders, Philadelphia, 1959.*

Most textbooks of physiology can be placed in one of several categories; either that of survey on elementary level or the more complete for the advanced student. Guyton has written the book someplace between these two points. The book is more than a survey or elementary text but not as detailed as the more advanced texts. It is designed for the student who needs a more extensive understanding of the principles of human physiology, but does not have the academic background for the more advanced texts.

The book is well organized and presented in a clear outline form; the drawings and illustrations are excellent and with few exceptions are self explanatory.

The author has been able to include many of the classical experiments in human physiology and has also developed a section on aviation and deep sea physiology that is applicable to those problems that are even now becoming apparent in the new field of space physiology.

Young Children in Hospitals. *By James Robertson, member of the British Psycho-Analytical Society; member of the Social Science Department of London University; psychiatric social worker with the London School of Economics. Cloth; price $3.00. Pp. 136. Basic Books, Inc., New York, 1959.*

What are the emotional problems of the young child when he is separated from his family and taken to the hospital? These basic questions are discussed by James Robertson in this new book.

Readers who are already familiar with Robertson's work in this particular area of child care through his film, "The Two-Year-Old Goes to the Hospital," will not be disappointed in this text for it deals in a very readable fashion with some of the fundamental principles underlying the care of children in hospitals. It is a text that should be read by all health workers; both by those who are working in hospitals and by those who are working with parents in the community.

It can be highly recommended.

Textbook of Pediatrics. *Edited by Waldo E. Nelson, M.D., D.Sc., Professor of Pediatrics, Temple University School of Medicine, Philadelphia; Medical Director of Saint Christopher's Hospital for Children. Ed. 7. Cloth; price $16.50. Pp. 1462 illus. W. B. Saunders, Philadelphia, 1959.*

This text represents the standard reference work in pediatrics. This edition, as was the case in earlier ones, achieves as close an approximation to complete coverage of the field as is possible in a single volume.

More than 80 contributors, each a recognized authority in his field, offer assurance of the reliability of this text. Concise editing has produced a volume which, while more comprehensive than before, has fewer pages.

Thirty-eight major sections include general factors in the care and evaluation of children, prenatal disturbances, the newborn, nutritional disturbances, infectious diseases, and sections concerning the various systems of the body. Each section is complete with a review of normal function, deviations from the normal, diagnostic and therapeutic procedures, and selected references for further reading.

All sections have been thoroughly revised and many subjects with important new developments have been covered thoroughly, including recent work in the enterovirus field and endocrinology. An accurate and complete index is included and the illustrations, some in color, are faithfully reproduced.

This book is essential as a reference for all who work with children. While designed particularly for the pediatrician, it will be found useful by the physical therapist, the social worker, the psychologist, physicians in fields other than pediatrics, and others whose work involves children.

Oral Communication of Technical Information. *By Robert S. Casey, Chief Chemist, W. A. Shaeffer Pen Co.; author of over 30 articles and various chapters in books and encyclopedias, many of these on chemical documentation. Formerly chairman of a subcommittee of the American Chemical Society submitting recommendations for improving organization of technical sessions at national meetings. Cloth; price $4.50. Pp. 199; illus. Reinhold Publishing Corp., New York, 1958.*

Methods of effective speaking for many occasions are assembled in this compact volume. The book is more or less a "How-to" for inexperienced speakers who must communicate technical information to colleagues or to lay groups.

It covers organization of material, composition, delivery of formal and impromptu speeches, and the use of audio-visual aids. In less detail it covers legal testimony, social conversation, and how to preside at meetings.

The author recognizes that creating comprehension in the minds of the audience is the principal purpose of communication and that technics of composition and organization are the same for all subject matter. While the book purports to emphasize the presentation of technical information, this reviewer feels that it must be classified as a general reference with secondary attention given to the scientific paper or talk.

Chapter I deals with barriers to effective communication and Chapters II and III with work habits and methods, and organization of the speech. Two chapters are devoted to personal technics of speech presentation: one concerns the formal speech and the other covers the informal or impromptu talk. There is a relatively long section which discusses the mechanical aspects of speech delivery, namely the use of audio-visual aids. This latter chapter gives sound hints for effective use of such materials and should be of considerable assistance to students, instructors and clinicians who wish to use teaching materials.

One particularly fine aspect of the content is a section listing correct pronunciation of commonly mispronounced words. A bibliography at the end of each chapter gives reference to more detailed coverage of information.

This book should be useful to students and to novices in the field of public speaking. It is a rapid reference source for a wide variety of situations which are met in all speaking occasions. It would have special value as a text or reference in seminar courses where the student first learns the rudiments of scientific paper presentation.

The reviews publishd here do not necessarily represent the opinions of the American Physical Therapy Association.

Book Reviewers for March

Edward Fitting, Ph.D., Administrative Field Representative, Michigan Crippled Children Commission, Lansing.

Helen J. Hislop, Teaching Fellow of The National Foundation, Department of Physiology, State University of Iowa, Iowa City.

Thomas C. Laipply, M.D., Professor of Pathology, Northwestern University Medical School, Chicago.

William D. Paul, M.D., Director of Physical Medicine, State University of Iowa, Iowa City.

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Catherine Warren, Chief Physical Therapist, Clinical Supervisor, Peter B. Brigham Hospital, Boston.

Paul F. Wherle, M.D., Associate Professor of Pediatrics, State University of New York Upstate Medical Center, Syracuse Memorial Hospital, Department of Pediatrics, Syracuse.

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(continued on next page)

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WANTED: Staff physical therapist for outpatient center with a general rehabilitation program. Excellent facilities and equipment. Starting salary no experience needed, $4500 per annum. Three weeks paid vacation and sick leave; 40 hour 5 day week. For further information write G. Margaret Gleave, Executive Director, The CURATIVE WORKSHOP of Racine, 2335 Northwestern Ave., Racine, Wisconsin.

WANTED: Registered Physical Therapists to work with an agency offering a program of comprehensive nursing care and rehabilitation. Will work with a staff of 12 physical therapists and will have opportunities for informal teaching and caring for patients in the home. Liberal personnel policies with salary based on experience. Apply to Executive Director, Visiting Nurse Association, 59 East Monroe St., Chicago 3, Illinois.

IMMEDIATE VACANCY: Registered physical therapist for 500-bed general non-profit hospital. Male or female. Five-day week, paid vacation, paid sick leave, progressive wage scales. Starting salary $4200.00; this hospital is the medical center of its community. Apply: Personnel Director, Aultman Hospital, Canton, Ohio.

PHYSICAL THERAPIST: At least one year's experience with children to work with crippled children program in state department of health. Travel to homes and centers is required. Merit system coverage, liberal personnel policies. Address replies to: Connecticut State Department of Health, 165 Capitol Avenue, Hartford, Connecticut.

STAFF PHYSICAL THERAPIST, male or female, for well equipped dept. under the active direction of Chief of Physical Medicine and Rehabilitation. Forty-hr. 5 day week, paid vacation and sick leave. Full maintenance available. Starting salary $4383 with annual increases to $5223. Write Director of Personnel, Baltimore City Hospitals, Baltimore 24, Md.

OPENING FOR PHYSICAL THERAPIST soon. Salary depending upon experience. Meals and laundry are available. Contact Ruth Brant, R.N., Administrator of Martins Ferry Hospital, Martins Ferry, Ohio.

Positions Available

OPPORTUNITIES for staff physical therapists in 500-bed teaching hospital. Department treats a wide variety of cases—both inpatients and outpatients. Pleasant University community located in foothills of the Blue Ridge mountains. Good working conditions and liberal benefits. Contact: Personnel Office, University of Virginia, 1416 West Main Street, Charlottesville, Virginia.

PHYSICAL THERAPIST—Chief therapist for modern, 100-bed general hospital. Therapist aide trained by present Chief Therapist available to assist. Affiliation with Board Physiatrist at teaching hospital 35 miles away. Starting salary $4,400 to $4,800 per year with excellent fringe benefits. Three major ski areas within 5 to 20 miles of hospital. Summer recreational activities excellent; 125 miles from Boston, Mass. Apply to Administrator, Springfield Hospital, Springfield, Vermont.

OPPORTUNITY for beginning or experienced physical therapist interested in career position in Rehabilitation Center with opportunity for advancement in field of Physical Rehabilitation. Regular benefits and increased privileges with longevity. Write to Directors, South Side Physical Medicine Center, 9145 South Ashland Ave., Chicago 20, Ill.

YOUNG MAN for CHIEF physical therapist for 400-bed voluntary hospital. Approved intern-resident program, accredited school of nursing. Modern hospital addition completed by mid 1960. Excellent benefit program. Write to Personnel Director, Christ Hospital, 2139 Auburn Avenue, Cincinnati, Ohio.

GRADUATES OF APPROVED SCHOOLS FOR PHYSICAL THERAPISTS, *new legislation provides that you may now practice under professional supervision in this State pending registration with the California Board of Medical Examiners.* Positions open in State Hospitals, the Veterans Home and special schools for handicapped children. Starting salaries $436.00 and up; liberal employee benefits; promotional opportunities. Streamlined civil service examinations twice a month in San Francisco and Los Angeles, and on request in other states near candidate's residence. Write State Personnel Board, 801 Capitol Avenue, P.T. 71, Sacramento 14, California.

PHYSICAL THERAPIST for in- and outpatient clinics of expanding general hospital with medical and physical therapy curricula; $4,040 with annual increments; 5-day week, vacation and sick leave. Contact Miss R. M. Latimer, Department of Physical Therapy, School of Medicine, 520 R. West Lombard St., University of Maryland, Baltimore 1, Md.

High starting salary with credit for experience; rapid advancement; overtime pay; life and hospital insurance; sick leave; 3 weeks paid vacation. Pleasant working conditions in private hospital setting associated with 3 full-time physiatrists. Graduate physical therapists interested in progressive restorative medicine should contact Director of Research and Education, Institute of Physical Medicine and Rehabilitation, 619 N. E. Glen Oak Avenue, Peoria, Illinois.

OPENING for STAFF PHYSICAL THERAPIST in rapidly growing Rehabilitation Center directed by Physiatrist. Wide variety of treatment program. Coordinated physical, occupational, speech-hearing, psychological, vocational and social services. Salaries are commensurate with experience. Liberal vacations and sick leave benefits, lunch and laundry provided. For complete information contact Executive Director, Harmarville Rehabilitation Center, Pittsburgh 38, Pa.

PHYSICAL THERAPIST to fill vacancy in $1,250,000 expansion, APTA; AMA approved graduate. Complete diversity of treatments; 50% of census is children. Excellent wage and vacation plan. Contact Mr. R. Ward, Administrator, Sunnyview Orthopedic & Rehabilitation Center, 124 Rosa Road, Schenectady, New York.

STAFF Physical therapist for Physical Medicine and Rehabilitation Department of 600-bed general medical-surgical and teaching hospital. Thirty miles from Manhattan, near all Long Island recreational areas. Salary $4,210-$5,560, 35 hours per week. Full maintenance $32.00 per month, plus other benefits. Write: Dr. H. S. Whiting, physiatrist, Director of PMR Dept., Meadowbrook Hospital, Hempstead, N. Y.

PHYSICAL THERAPIST, REGISTERED. Salary open, 40-hour week. Liberal employee benefits. Fully equipped, modern Therapy Department. Apply Personnel Office, De Paul Hospital, Norfolk, Va.

(continued on next page)

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Positions Available

SOUTHERN NEW ENGLAND—STAFF POSITIONS. Registered physical therapists for expanding physical medicine department under full time personal direction of qualified doctor of physical medicine. Opportunity to participate in development of modern, progressive rehabilitation program in 680-bed voluntary general hospital serving metropolitan area. Modern personnel practices and salary scale. Write Personnel Department, Rhode Island Hospital, Providence 3, R. I.

REGISTERED PHYSICAL THERAPIST for well established department in 330-bed voluntary general hospital. Wide variety of cases. Above average starting salary. Air-conditioned department. Five-day work week. University city of 80,000. Apply Decatur and Macon County Hospital, Decatur, Illinois.

PHYSICAL THERAPISTS—(3), Male or Female, for 8-week summer camping programs in Pennsylvania, June 25 to August 24, 1960. Salary, $400-$500, plus full maintenance. Orthopedic Consultants available. Apply: Charles H. Freeland, Camping Administrator, Pennsylvania Society for Crippled Children and Adults, Inc., 1107 North Front Street, Harrisburg, Pa.

WANTED IMMEDIATELY: Two (2) Staff Physical Therapists, expanding department of an orthopaedic clinic. Department under direction of a Physiatrist. Vacation, sick leave, holidays. Inquire: Arthur E. White, M.D., Anderson Clinic, South 25th Street & Army-Navy Drive, Arlington, Virginia.

REGISTERED PHYSICAL THERAPIST—Positions open for Head R.P.T. and Staff R.P.T. in well established department. Excellent working conditions, 40-hour week, liberal vacation and sick leave policies. Salaries open. Apply E. G. Derrick, The Orthopedic Clinic, 2620 North 3d Street, Phoenix, Arizona.

QUALIFIED PHYSICAL THERAPIST (two) for outpatient cerebral palsy treatment center. Starting salary $4550 per year. Two months vacation, liberal sick leave benefits. Liberal personnel policy. Contact Robert Schlitt, Director, Peninsula Cerebral Palsy Training Center. 901-24th Street, Newport News, Virginia.

QUALIFIED PHYSICAL THERAPIST in a well equipped Physical Therapy Dept. of general hospital. Hospital is modern, completely air conditioned, located 15 minutes from downtown New Orleans. Starting salary commensurate with experience and qualifications, regular increments. Forty-hr. week, paid vacations, holidays, sick leave, hospitalization, laundry, retirement plan and other fringe benefits. Apply: Personnel Manager, Ochsner Foundation Hospital, 1516 Jefferson Highway, New Orleans, Louisiana.

QUALIFIED PHYSICAL THERAPIST, immediately, for home care and hospital programs. Forty-hr. week, good salary and fringe benefits. Write Medical Director, Louisiana Chapter, Arthritis and Rheumatism Foundation, Tulane Medical School, 1430 Tulane Avenue, New Orleans 12, Louisiana.

QUALIFIED PHYSICAL THERAPIST, 71-bed general hospital with excellent growth potential. Salary commensurate with ability. Five-day week, four weeks paid vacation, twelve days sick leave annually, and seven paid holidays. Write stating references and salary desired to: Personnel Director, Kerbs Memorial Hospital, St. Albans, Vermont.

STAFF PHYSICAL THERAPISTS: needed for Iowa Methodist Hospital's newly opened 120-bed Younker Memorial Rehabilitation Center. Excellent chance for advancement. Competent supervision, professional staff and assistants. Both in- and outpatient work. Salary range $365-$420; 40-hour week, vacations, sick leave, holidays, insurance, other benefits. Inquire Personnel Department, Iowa Methodist Hospital, Des Moines, Iowa.

REGISTERED PHYSICAL THERAPIST for excellently equipped department in a new 250-bed general hospital. Liberal personnel benefits, 40-hour week. Salary open. Write to Personnel Director, Rockford Memorial Hospital, 2400 N. Rockton, Rockford, Ill.

PHYSICAL THERAPIST with at least one year experience to join staff of growing rehabilitation center. Patients include various types of handicaps. Excellent supervision and working situation, with Orthopedic Surgeons and other medical specialties. Beginning salary, $4,200 to $4,800 per annum. Contact Robert L. West, R.P.T., Easter Seal Therapy Center, Tallahassee, Florida.

WANTED: Physical therapist for established department, 142-bed chronic, convalescent, and general hospital. Salary open. Comanche County Memorial Hospital, P. O. Box 1046, Lawton, Oklahoma.

STAFF PHYSICAL THERAPIST for 400-bed private general hospital with large active volume outpatient department. Liberal salary range and employee benefits. May be experienced or recent graduate—licensed in Wisconsin or eligible to take license examination. Excellent working conditions in one of midwest's foremost institutions. Centrally located in city and convenient to outstanding residential and shopping facilities. Contact Personnel Director, Milwaukee Hospital, 2200 W. Kilbourn Ave., Milwaukee 3, Wisconsin.

ORTHOPEDIC CLINIC with two surgeons needs a qualified physical therapist (female preferred). Salary dependent upon experience. Drs. Lebold and Anderson, 1489 State Street, Salem, Oregon.

WANTED: Registered physical therapist for 70-bed Children's Orthopedic Hospital. Present registered therapist on maternity leave will return on part time basis only. Department also has well trained aide. Salary commensurate with experience and ability. Excellent opportunity for advancement. Fringe benefits include hospitalization insurance, retirement plan, meal while on duty, laundry of uniforms. Room and board at nominal cost available in lovely Nurses Cottage. Mrs. Helen P. Haese, Superintendent, Scottish Rite Hospital, 2201 Welborn, Dallas 19, Texas.

Positions Available

Physical therapist registered with at least two years' experience—as HEAD OF DEPARTMENT in a completely new 365-bed general hospital. Salary commensurate with experience. Liberal fringe benefits and progressive personnel policies. Apply: St. Agnes Hospital, Wilkens and Caton Aves., Baltimore 29, Md.

PHYSICAL THERAPIST in cerebral palsy outpatient center. Beginning salary $4,800 to $6,000 depending on qualification and experience. Social Security, sick leave, two week vacation, five day, forty hr wk. Apply United Cerebral Palsy Center, 621 N. McArthur, Panama City, Florida.

STAFF PHYSICAL THERAPIST: for outpatient rehabilitation center treating both children and adults. Experience preferred but not essential. Starting salary, without experience, $4500. Forty hour, five-day week. Excellent personnel policies. Contact: Benedict R. Kraus, Chief P.T., Community Rehabilitation Clinic, 614 Dartmouth, S.W., Canton, Ohio.

PHYSICAL THERAPIST, female, wanted to treat outpatients of two orthopedic surgeons in newly equipped section of their office. Position available in June. Salary open. Write to: Drs. Davis and Hopkins, 309 Mayer Bldg., Portland 5, Oregon.

Wanted PROGRESSIVE DIRECTOR and two qualified STAFF THERAPISTS to develop well equipped physical therapy department. Liberal personnel policies. Salary commensurate with experience. Contact Glenn C. Williams, Administrator, Mary Free Bed Guild Children's Hospital & Orthopedic Center, 920 Cherry St., Grand Rapids 6, Michigan.

WANTED IMMEDIATELY: One qualified field staff physical therapist for home-bound service in a generalized voluntary public health nursing agency to work under qualified physical therapy supervision. Current salary range $4104-$4968 with increase expected June 1; 37½-hr., 5-day wk; 8 holidays; 22 working days vacation; 15 working days sick leave. Apply Supervisor, Physical Therapy Department, Visiting Nurse Society of Philadelphia, 1340 Lombard Street, Philadelphia 47, Pennsylvania.

PHYSICAL THERAPY CONSULTANT: Help develop a new state geriatrics consultation service to local health authorities and nursing home administrators. Assist in training institutes. Demonstrate physical therapy techniques. Need B.S. in physical therapy and four years' experience including two in specialized work with elderly, handicapped people. Start at $563. Wisconsin State Board of Health, State Office Bldg., Madison.

QUALIFIED PHYSICAL THERAPIST (male or female) for well equipped physical therapy department. Five-day, 40-hours a week, paid vacation and sick leave. Write: Mr. L. D. Harris, Physical Therapy Director, Cook County Hospital, 1825 West Harrison Street, Chicago 12, Illinois.

QUALIFIED PHYSICAL THERAPIST for expanding program in new department in 140-bed geriatric hospital, in- & outpatients. Attractive personnel policies, 11 paid holidays, vacation, sick leave, retirement benefit. Salary open. Stimulating community near Purdue University. Apply to Executive Officer, Indiana State Soldiers' Home, Lafayette, Indiana.

STAFF PHYSICAL THERAPIST (2) for 100-bed children's Rehabilitation Center. Excellent possibilities for professional growth; graduate education available. Good working conditions and liberal benefits. Salary dependent upon experience. Inquire: Chief Physical Therapist, Home for Crippled Children, 1426 Denniston Ave., Pittsburgh 17, Pa.

QUALIFIED PHYSICAL THERAPIST for immediate placement on staff of modern, well equipped, expanding department of 300-bed general hospital. Located in progressive university city of 40,000. Excellent opportunity for professional advancement. Contact: Mr. James E. Roetto, Chief Physical Therapist, Jackson-Madison County General Hospital, Jackson, Tennessee.

STAFF PHYSICAL THERAPIST for children's rehabilitation center, primarily cerebral palsy. Careful screening program, university affiliations, teaching program, good working conditions. Salary range $3852-$4692. Address Dr. Lenox D. Baker, Medical Director, North Carolina Cerebral Palsy Hospital, Durham, N. C.

PHYSICAL THERAPIST: Orthopedic Clinic staffed by three orthopedic surgeons, in one of Chicago's beautiful North Shore suburbs. Interested only in top notch, experienced individual. Salary open. Ravinia Orthopedic Clinic, 695 Roger Williams Ave., Highland Park, Illinois.

STAFF PHYSICAL THERAPIST: Well established department handling adult cases in a 604-bed general private nonprofit hospital. Department under orthopedic staff supervision. Salary open; 40-hour week; noon meal and laundry furnished; two weeks' paid vacation and sick leave; Blue Cross and Blue Shield plan available. Write Phillip B. Donley, Chief P.T., Akron City Hospital, Akron, Ohio.

CHIEF PHYSICAL THERAPIST—Male or Female—for rapidly expanding rehabilitation program in a multi-disability facility. Forty-hour week, two week vacation, sick leave, eleven holidays and retirement plan. Salary range $5,000-$5,900. Apply Personnel Director—Onondaga County Hospital, Syracuse, N. Y.

PHYSICAL THERAPIST for outpatient Rehabilitation Center directed by physiatrist. Wide variety of treatment program. Coordinated physical, occupational, speech-hearing, psychological, vocational and social services. Excellent personnel policies and working conditions. Contact R. A. Silvanik, Administrator, The Rehabilitation Center of Summit County, Inc., 326 Locust Street Akron 2, Ohio.

Positions Available

PHYSICAL THERAPISTS (Cerebral Palsy Program) $415-505 month. Requires graduation from recognized program, California registration, plus 1 year of P.T. experience. A progressive program in a modern expanding Health Department. Mr. I. Schnayer, Alameda County, 188 12th Street, Oakland, California.

PHYSICAL THERAPIST: Experienced. Wanted for active, well equipped department in a 154-bed hospital with expansion program under way. Pleasant surroundings in north suburb of Chicago. Modern housing. Recreational facilities and cultural activities available. Good salary, 40-hour week, varied cases treated. Contact Personnel Director, Highland Park Hospital, Highland Park, Illinois.

PHYSICAL THERAPIST, female, for expanding department in 800-bed general hospital. Salary open—adjusted in accordance with experience. Good personnel policies, paid vacation, sick leave, Blue Cross-Blue Shield, free Pension Plan, 40-hour week. Fine Medical supervision. Write or call John R. Mote, Administrative Assistant, Methodist Hospital, 1604 N. Capitol Ave., Indianapolis, Ind.

WANTED: second physical therapist for 200-bed general hospital, semiclosed staff. Physicians referring patients all board certified or eligible. Salary open, liberal personnel policies, good housing available, expenses paid applicants invited for personnel interview. Contact: Wayne B. Foster, Adm., Holzer Hospital and Clinic, First Avenue & Cedar Sts., Gallipolis, Ohio.

CHIEF PHYSICAL THERAPIST needed immediately. Starting $5,200. Two physical therapists June 1 starting $4,200. Mild climate, near mountains and ocean. Fine schools and living quarters close by. Write Laurin Hinman, Rehabilitation Institute of Oregon, 1615 Southwest 14 Ave., Portland, Oregon.

POSITIONS AVAILABLE for qualified physical therapists for active rehabilitation department in modern 500-bed chronic disease hospital. Salary open. Four weeks vacation. Sick benefits, lunches. Apply Personnel, St. Barnabas Hospital, New York 57, New York.

QUALIFIED PHYSICAL THERAPIST for staff position in a 440-bed hospital. Department soon to be enlarged. Wide variety of cases divided between hospital and outpatient. Forty-hour week, paid vacation, sick leave and holidays; salary open depending upon qualifications and experience. Excellent opportunity in a growing community located in the Valley of the Sun, winter capital of the Southwest. Apply Personnel Director, Good Samaritan Hospital, Phoenix, Arizona.

QUALIFIED STAFF PHYSICAL THERAPIST. Female preferred; 600-bed hospital, 40-hr. week. Social Security, sick leave and holiday benefits. Three weeks vacation. Salary open. Apply: Personnel Office, Lancaster General Hospital, 525 North Duke Street, Lancaster, Pennsylvania.

PHYSICAL THERAPIST—Male or female. Salary open. Good personnel policies. Hospital fully approved. Apply: Robert M. Murphy, Administrator, Floyd Hospital, Rome, Georgia.

STAFF THERAPIST for a new and expanding department in 400-bed, fully accredited general hospital. Good salary and personnel policies, no weekends, teaching optional. Write: Personnel Director, St. Vincent Hospital, Erie, Pa.

STAFF PHYSICAL THERAPIST: To help service 490-bed hospital. Cross-section of medical and surgical disabilities treated. Congenial working conditions. Liberal salary and fringe benefits. Five-day, 40-hour week. Apply Personnel Department, The Grace Hospital, 4160 John R., Detroit 1, Michigan.

RPT's, male or female, for Physical Medicine and Rehab. Dept., Tampa General Hospital, $4400-$5500. Vacancy for Chief PT, $4944-$6327. Reply Rehabilitation Coordinator, Tampa 6, Florida.

PHYSICAL THERAPIST: 270-bed acute general hospital with expansion program in the planning stage. Starting salary based on experience. Periodic increases. Excellent benefits including paid vacations, sick leave, holidays, and hospital paid pension plan. Write: Personnel Director, Northwestern Hospital, 810 East 27 Street, Minneapolis 7, Minn.

PHYSICAL THERAPIST WRITER, female, to write operating manuals for electromedical equipment; edit technic information; some personal educational work; limited amount of traveling. THE BURDICK CORPORATION, Milton, Wisconsin.

NURSE-PHYSICAL THERAPIST in combined official-voluntary public health nursing service. Requires graduation from recognized program, Calif. registration or eligibility for same. Central nursing office 20 mi. south of San Francisco on beautiful peninsula. Start sal. $491. to $519., after 6 mos. Write Mrs. Eva M. Reese, Visiting Nursing Association of San Mateo County, San Mateo, California.

QUALIFIED PHYSICAL THERAPIST starting in June or July for offices of two orthopaedic surgeons. Write Dr. W. M. Watts, 108 Doctors Bldg., Ashville, N. C.

IMMEDIATE opening for a registered Physical Therapist for a General Hospital expanding to 207 beds. Paid vacation and sick leave, 40-hr. week, 7 holidays. Charlotte Hungerford Hospital, Torrington, Conn.

STAFF PHYSICAL THERAPISTS (2 each), immediately, GM&S hospital, 40 hr. week, 8 holidays, 13 working days vacation, 13 days sick leave, group insurance, retirement benefits; starting salary, $4040 new graduate, $4980 with 6 mos. experience. University city. Contact Chief P.T., VA Hospital, Durham, N. C.

PHYSICAL THERAPIST

For new modern air-conditioned Physical Medicine & Rehabilitation Department under direction of full-time Physiatrist; 380-bed general hospital. Large gymnasium. Latest equipment. Wide variety of treatment program. Salary open. Write Dr. Edward P. Reese, Director, Department of Physical Medicine & Rehabilitation, Lutheran Hospital, 2609 Franklin Boulevard, Cleveland 13, Ohio.

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